

# 'Paternal' poly criticized for industrial bias

By Sue Reid

The style of management in the Huddersfield Polytechnic is old-fashioned and paternalistic with a bias towards industrial rather than academic practices. It has been alleged by the college's branch of the National Association of Teachers in Further and Higher Education.

In a severely critical submission to the Council for National Academic Awards, which made its quincentennial visit to the polytechnic last month, the branch claims that the present management system is inappropriate, the decision-making process clumsy and the academic board ineffective.

The submission says: "In practice the academic board has seemed to many members of the polytechnic to be completely ineffective and the executive power of the director and his closest colleagues has encompassed matters which could have been the subject of policy decisions by a more effective academic board."

It adds: "The current style of management in the polytechnic is old-fashioned paternalistic, apparently modelled on an industrial rather than an academic type of management. It seems inappropriate to us for an institution where most of the initiative for courses and for day-to-day running and teaching of courses must necessarily come from the academic staff."

The branch alleges that Mr Keith Durand, rector of the polytechnic, has in practice the power to make any appointment, to averul his appointments committee, and to decide to which department staff should be appointed. This is regarded as a "most serious situation."

The submission calls for a restructuring of the academic board and requests the CNAA to consider the effectiveness of the processes

of academic decision-making at the college. It concludes: "The ineffectiveness of the present academic board, in our view, may be attributed to both its size and its heavy ex-officio representation. Proposals for the revision of its composition do not seem calculated to make it a more effective decision-making body."

A second memorandum submitted to the CNAA by Mr David Mann and Mr Mervyn Drayton, two staff assembly governors at the polytechnic, is also critical of the process of government. It alleges a widespread concern among academic staff about the lack of adequate procedures for democratic government.

It is the staff assembly's view that the failure of the academic board to fulfil its duties arises partly from its high proportion of ex-officio members, and partly from a system of appointing loans to carry out, in person, functions assigned to the academic community as a whole," claims the document.

The tendency to exclude teaching staff from decision making and put it in the hands of a small number of academic staff, who do little or no teaching, had increased to such a level that it now cast doubt upon the polytechnic's ability to pursue priorities appropriate to an academic community and hence threatened the future of both teaching and research. Both the governors' and the college's articles of government to be revised.

Dr Edwin Kerr, CNAA chief officer, said this week that the visiting party had discussed the NATFHE submission and was now satisfied that the academic board had instituted appropriate methods of dealing with the issues raised.

Mr Durand, the polytechnic's rector, said the CNAA had given the college a "clean bill of health". The CNAA will publish its quincentennial report this summer.

# Annan report sets stage for more educational air time

by David Walker and Auriel Stevens

The Annan committee on the future of broadcasting, which reported this week, has set the stage for a major expansion of the air time devoted to education.

The committee, led by Lord Annan, provost of University College London, recommends the creation of a fourth "open" television channel to show not only Open University programmes but also educational programmes financed by local authorities, universities and colleges. This channel would serve as a medium for Welsh language broadcasting in Wales and also transmit a range of programmes by independent producers.

The fourth channel, run by an Open Broadcasting Authority, would not be an "educational ghetto" as feared by the Open University in its own submission to the Annan committee. Influenced by the work of Mr Anthony Smith, former broadcaster and now fellow of St Antony's

College, Oxford, the committee recommends a channel containing information and entertainment as well as education. It would provide air time for "mass" television and some of its funding would come from advertisements.

The Annan committee has paid regard to the submissions received from academic media producers, especially on the question of how the BBC and independent television might to organize surveys of their audiences.

Mr Paul Walton, of Glasgow University, a member of a research team which recently produced *How News*, a study of television current affairs, said he found the report "enterprising". In particular he noted the recommendation that audience studies be consolidated under a single body serving both the BBC and independent television and the opportunities this afforded.

Other main recommendations include the establishment of an "open college" similar to the Open University but at a lower level.



Princess Margaret listens to Spectral, an electronic composition based on the song of the hump-backed whale by Mr Tim Souster, research fellow in electronic music at Keele University. It was part of a one-day visit to the university, at which she is chancellor.

# University and school teaching 'should be better matched'

Teaching methods in the sixth form and in universities should be better matched, and first year courses need to be planned with a recognition that it is sixth-formers and not fully prepared students who are entering higher education.

These are two major conclusions after nearly a decade's research by two educational psychologists, which will be published shortly in a book called *Degrees of Excellence*. The researchers, Professor Noel Entwistle, of Lancaster University, and Dr John Wilson, of Murray House College of Education, Edinburgh, say their conclusions are germane to the debate now going on about the replacement of A levels by a wider sixth form examination.

They call for a new body to set up special responsibility for developing new methods of teaching and curricula in universities and colleges, doing for higher education what the Schools Council does for primary and secondary education.

The research, covering school pupils and university students in Scotland and England, was into the best preparation for academic success. For example, the authors discovered—perhaps unsurprisingly—that success in secondary school was the best indicator of subsequent academic achievement. The ratings were usually a good guide to whether a student would fail or drop out, though less reliable as an indicator of future success.

Personally characteristics are related to success in degree examinations. For instance, among language students it was found that "tender-mindedness" and having religious values are associated with above-average degree performance. *Degrees of Excellence*, by Noel Entwistle and John Wilson, to be published in May by Hodder and Stoughton, £7.50.

# Occupied NELS site closed

The governors of North East London Polytechnic this week closed down the college's Barking campus, which has been occupied by students for two weeks protesting over tuition fee increases.

They have now applied for a court injunction to remove the students still in occupation of the polytechnic. It would be closed, they claim, have refused to negotiate with Dr George Brosnan, the polytechnic's director.

Dr Brosnan has offered to organize a public meeting about tuition fees with Department of Education and Science officials. Polytechnic staff and students, to have talks with the Ministry of Overseas Development and to publicize the benefits of a hardship fund. He also said he would make representations to the Government over the plight of students doing repeat years of study.

Last week Dr Brosnan warned that handed back into the control of the polytechnic it would be closed. Students at Manchester Polytechnic were this week staging a similar office occupation over fee increases. At Sheffield, Police evicted students from their local education offices after the Labour group on Sheffield City Council's education committee agreed to issue a five-point statement about the tuition fee rises.

# Count me in, says the Count

by Judith Judd

A middle-aged German count is among the contenders for chair at the National Union of Students conference in Blackpool.

Count Alexander de Gra, a third-year student reading law and philosophy at Southampton University, is standing on an independent ticket to end the present crisis in higher education.

His manifesto reads: "Education should impart a vision, a confidence in the value of the human intellect, a source which generates a confidence whereby a struggle into the unknown is made certain of its political aim."

Students at Southampton are uncertain of his political aim, although he has been active in the student union. He is definitely not a right-wingocrat, said one. "He is in the occupation over fee increases. Outside it, he is an amateur theoretician."

The broad Left rallies of Labour and Communist supporters is almost certain of its hold on the union, but may face some class fighting. It may also have to get its candidates against the simple transferable vote.

Miss Sue Simpson, the group's candidate for president of the Conservative National executive, will face competition from Mr Loring, a former union and the candidate of the Socialist Students Alliance.

Mr Charles Clarke, the president, said the vote for the new executive was expected to be between 150 and 200 delegates of a total of 800, would have an important influence in the future.

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One of the most fiercely debated issues will be the increase in fees. Sheffield students' union proposed a national fee cap.

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Universities will also receive an additional £35.1m for furniture and equipment, compared with £33.5m this year.

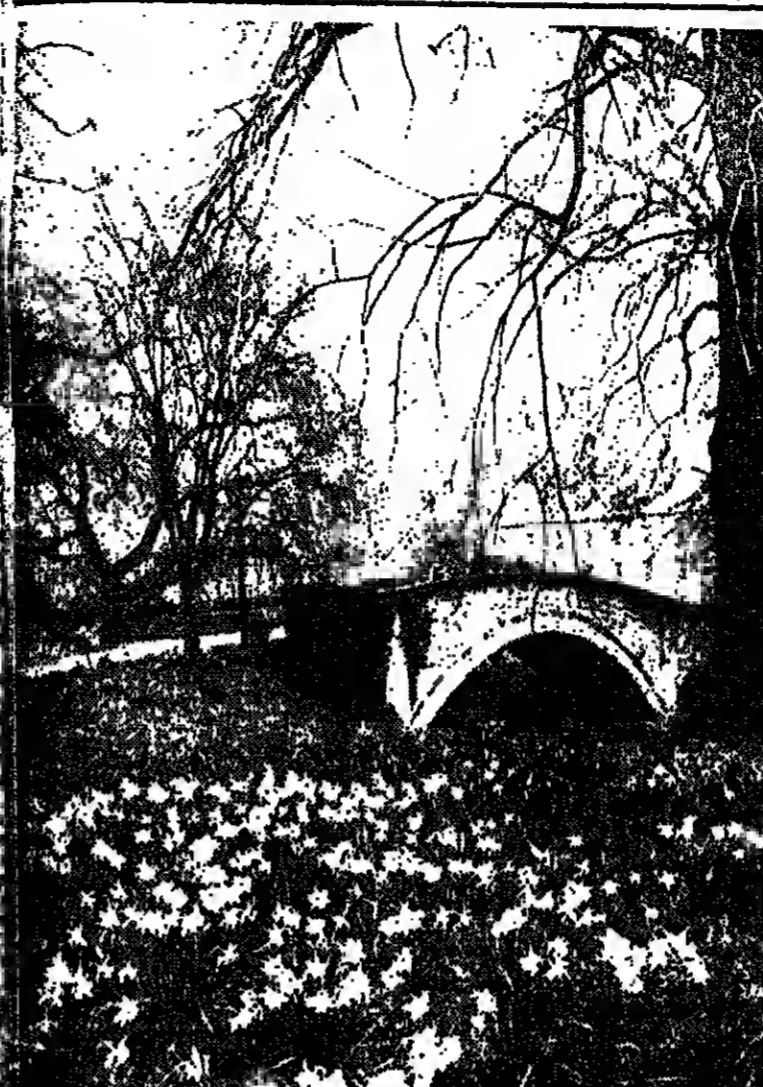
Mrs Williams also announced provision for the universities' recurrent grant for the next three years, thus resuming some elements of the quinquennial system of financing which was abandoned in 1975: £556m in 1978-79, £564m in 1979-80 and £572m for 1980-81, all at 1977-78 prices. They assume the same level of tuition fees as in October because no decision has yet been taken for fees in those years.

Provisional figures have also been announced for the furniture and equipment grant. They are: £29m in 1978-79, £39m in 1979-80 and £42m in 1980-81.

Mr Oakes, Minister of State for Higher Education, said this week that the decline in the recurrent grant between 1977/78 and the following year was partly because of industrial chemists.

Mr Norman Thompson, the Institute's president, and director of the survey, gave the results to the RIC conference meeting in London this week. He said the fourth place given to technical competence "surprised many" and it was "strange and disturbing in these intellectually turbulent days" that commercial appreciation was not included among the 12 attributes most relevant to achieve an outstanding career in chemistry.

In industry chemists, not just those in university but also in the public sector and the academic world, are aware of the commercial importance of their work and objectives of their organization and society at large, said a component, perhaps a major component, is rising from the conditions they draw from their work's life.



A scene which might warm the heart of Wardsworth, American tourists, in a dramatic undergrowth this year. Mrs Williams said, as spring comes in King's College Chapel and the "backs" at Cambridge.

# Drop in recurrent income less than UGC predicted

Universities' total recurrent income in 1977-78 will be £682m, a cut of 10 per cent in real terms on the £750m they received this year, Mrs Williams, Secretary of State for Education and Science, announced this week. The reduction is far less than was originally feared by the University Grants Committee, which had predicted about a 4 per cent drop.

The recurrent grant is £562m, based on an assumption that the universities will receive £152m more from increased tuition fees. The first time the recurrent grant also includes a sum—£32m—the local authority rates payable by universities.

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# Birthrate threatens university growth administrators say

by Frances Gihli

Universities and polytechnics may be in danger of suffering the same fate as that which has overtaken the colleges of education because of the sharply declining birthrate, the Conference of University Administrators has warned.

In a report on forecasting higher education numbers, presented at their annual conference (this week in Swansea), the CUA says this is the most serious threat yet to the Robbins principle. The era of growth in higher education is drawing to a close.

Small universities would not be able to grow to medium size, and the medium-sized would not be able to catch up with the bigger. It says. Advanced further education might be even more vulnerable, because despite growth in polytechnics, universities still attracted most of the better candidates.

It warns that as a result the government might wish to hold down expansion so as not to recruit extra staff or invest in additional plant which would be surplus to requirements when the downturn in numbers arrived.

But although the 18 year old age group would fall by about 32 per cent between 1982 and 1995, the effect might not be as bad as predicted by the Department of Education and Science.

Recent statistics showed that the decline in the birthrate was in skilled and unskilled occupational groups, while about 50 per cent of fathers of university students were in professional or managerial occupations.

Other mitigating factors might be the current trend for more sixth-formers to stay on at school and obtain higher education qualifications, and for more women and mature students to apply for higher education.

The report is the result of more than a year's work by 14 members of the CUA under the chairmanship of Mr M. L. Shattock, academic registrar of Warwick University.

Its main purpose is to spell out and provide some explanation of the statistical pointers available so that those involved in administering higher education can gain a better understanding of the issues.

No one who had studied the statistics available, it says, could doubt that higher education was approaching a watershed quite as significant as that which prompted the Robbins inquiry in the 1960s.

But this time the climate is considerably less optimistic and some of the liberal assumptions of the early 1960s have been severely shaken.

It urges universities and the whole of higher education to think about these problems now, so as not to be caught in "the state of unpreparedness that characterized the colleges of education."

If these questions were being considered, very little data or conclusions were being made openly available. Hence the present unilaterally attempted to examine the uncertainties of the future shape of higher education.

The crucial statistics should not be restricted to the Government. The report calls for a joint standing committee of the appropriate Government departments and all parts of higher education, to monitor statistics relating to demand for higher education and ensure the right questions are being asked and answered.

Unless some machinery like this is established the feedback of what is actually happening to the ratio of demand at this crucially important time will not occur quickly enough or in an atmosphere of sufficient trust.

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# Profile of ideal chemist

by Clive Coakson  
science correspondent

The ideal chemist is above all a man or woman of integrity, demonstrating honesty, impartiality, trustworthiness, reliability and moral courage. Logical thought and ability to communicate are next to the list of his most important qualities, above technical competence, but numerical appreciation: none of these did not make the top 12.

This picture emerges from a detailed study by the Royal Institute of Chemistry of the attitudes of 50 of its past and present council members—all senior academic or industrial chemists.

Mr Norman Thompson, the Institute's president, and director of the survey, gave the results to the RIC conference meeting in London this week. He said the fourth place given to technical competence "surprised many" and it was "strange and disturbing in these intellectually turbulent days" that commercial appreciation was not included among the 12 attributes most relevant to achieve an outstanding career in chemistry.

In industry chemists, not just those in university but also in the public sector and the academic world, are aware of the commercial importance of their work and objectives of their organization and society at large, said a component, perhaps a major component, is rising from the conditions they draw from their work's life.

When the answers were broken down according to the respondents' areas of activity the consumer oriented group (marketing, sales, and so on) was the only one that did not put integrity first.

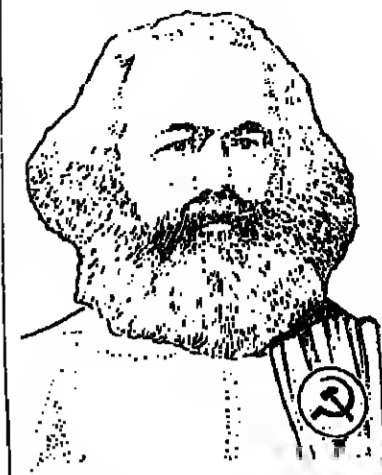
Sociability—defined as the ability to collaborate with others—was put fourth by chemists in technical administration, but only tenth by those in research and development, which Mr Thompson (who is head of research for Shell) found particularly disturbing.

The same 50 chemists were asked what qualities were necessary for leadership, and again integrity came first by a long way.

Whilst legal regulations can have their place in ensuring adherence to founding precedents, they cannot replace the integrity of a professional, applied at times and under all circumstances.

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More local lads, fewer teachers

A decline in the staff-student ratio and an increase in the proportion of students coming from the region are two trends in Birmingham University revealed in statistics from its computer records office.

The proportion of students from the West Midlands region has risen from 26.7 per cent in 1971/72 to 32.9 per cent. At the same time the number of full-time teaching and research staff has declined from 1,160 in 1973-74 to 1,046 now, which has produced a worsening in the staff-student ratio from roughly 1:7 to 1:8.

\$30,000 for Bodleian

Oxford University's Bodleian Library has received a grant of \$30,000 to be devoted to a collection of books illustrating cultural relations between the United States and Britain.

'On the Move' wins

The BBC television programme, On the Move, which encourages adult illiterates to seek help with reading and writing, has been awarded the 1976 British Academy of Film and Television Arts Award for the best specialized programme.

Poly teachers appeal

The Association of Polytechnic Teachers has urged the Department of Education and Science to reconsider its plans to halt teachers joining at the polytechnics.

Shop stewards

There were 18,000 shop stewards on courses in polytechnics and colleges of further education last year, and not 1,800 as stated in an article on a management studies conference (THIS, March 11).

General Vacancies continued

Does a puzzle challenge you to solve it? HONOURS GRADUATES a career that appeals to reason

Oxford opens doors to proctors in skirts

Women dons at Oxford will be eligible for election as university proctors if approval is given next term to a new election system.

At present, the five women's colleges are included in the cycle of colleges which elect the assessor, an office which, it is admitted, is inferior status to that of proctor.

Hebdomadal Council—the university's inner cabinet—has accepted a report of a committee set up a year ago to "reconsider the desirability and practicability of opening up to all colleges the opportunity to elect proctors".

Contribution fund for review

The rules of the college contribution fund at Oxford University are to be reviewed. The fund was set up 12 years ago for the richer colleges to help the less well-off by bringing their endowments up to £750,000 each.

Lord Home quits

Lord Home of the Hirsh Chancellor of Heriot-Watt University, has announced his wish to retire from the post in July.

Easter at Keele

Keele University's adult education department is in strike colours and seminars for magistrates, detained youth workers, probation officers and social workers during the Easter vacation.

Bleak future for modern language courses in colleges

Modern language teachers are increasingly likely to be trained by university departments of education and not colleges of education, where the recent reorganization has put training courses at risk.

This was stated at a conference on foreign languages, teaching organized by the Centre of Information on Language Teaching and Research (CILT) on Saturday.

New bid to end 6 month strike

Plans to appoint a panel of mediators in an attempt to bring the six-month-old technicians' dispute at Birmingham University to an end have been agreed in principle by the Association of Scientific, Technical and Managerial Staffs and the university.

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Don's diary

Delight in Dar

Decide to walk the half mile in the sunshine in the university, nice and cool and I like looking at the bougainvillea. Meet Tanzania national assistant, who got a first at the North-East London Polytechnic.

Of course, integrated circuits are relevant—their use has led to at least tenfold price reduction per electronic function in the past few years—why should the Tanzanians be taught expensive old-fashioned valve technology?

Foreign exchanges

Off to lecture about the design of synchronous digital counters. Kaffeekeats about a good compromise between the German and English methods of designating the directions of currents and voltages.

Jambo

Afternoon to the Kunduchi Beach Hotel our first home—we stayed there for three months—a beautiful, white arabesque structure consisting of repeated arches.

Management for Kingston

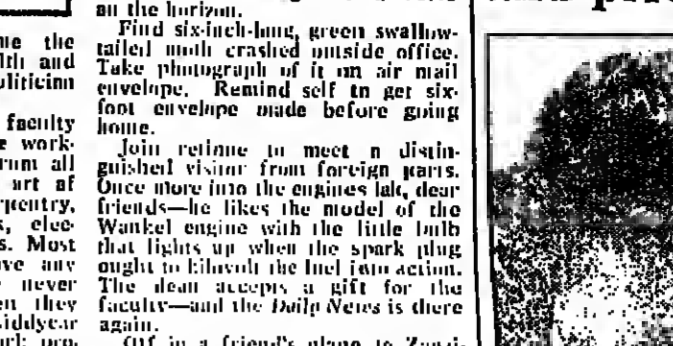
A new stage in the Kingston Regional Education Authority's development began last week.

David Walter

The author is senior lecturer in electronics at the University of Dar es Salaam, an economist from Hatfield Polytechnic.

The great debate and priorities

The morale of educators is low, and the response has been more in terms of budgets than in terms of post-school education.



James Porter

Recently the BBC's somewhat distorted window on the world displayed one of the more arresting contrasts in the Great Debate when Angela Pope asked her colleague into the exposed fibre of Faraday Comprehensive School.

Business

To the senate meeting—nearly all Tanzanians now. Discussion about the maintenance of the "French connection", and should students of higher education go to France or West Africa.

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Peter O'Toole and Donal McCann in 'Waiting for Godot'. Berkoff's work is part of the Cardiff course.

# Theory and practice of drama

by Frances Gilt

To bridge the gap between the stage and the seminar is the aim of a new postgraduate course in modern theatre starting at University College, Cardiff, in December.

Students will not only read and analyse plays, but learn at first hand how an actor approaches his role, what problems a director must resolve and what facilities a modern theatre can offer to enhance the dramatist's conception with sight and sound.

The practical aspect will be offered by the university's Sherman Theatre, which already runs a number of diploma courses and a large and varied programme of both professional and amateur work.

In the academic side, the course will start with drama in Dublin and London at the beginning of the century. It will look at the first national and experimental theatre in Britain, at the impact of Ibsen on the London stage, and end with Heekon, Pinter and Stoppard.

Theory and practice will be intertwined throughout. Students will be encouraged to take part in the Sherman diploma courses in performing skills so they will know how an actor works and in aspects of technical training that will teach them how a theatre works.

There will be a theoretical framework, with seminars based on an author or topic, and they will also be expected to work on their own projects in essays and their work will take them outside the seminar subject. Some will involve practical experiment, and students will move from training to production.

Professor Mahmud Keshal, head of the English department, says: "There seems no reason why a student who has become interested in drama in London City should not experiment, for instance, with scripts and lighting, or mount a production of a Yeats play with the *uber-marionette* in mind.

"By something more routine might emerge: a theatre workshop at the scene at the front line from *The Silver Tassie*, a transference of

a Pinter script from the theatre."

Professor Keshal admits that practical work, directors, actors, and materials are not always available. "A good department might have enough space for a course theatre which inevitably always easily accessible linguistic barriers.

But there are other points out. The student should be in small groups, with one staff, student ratio, and the whole arts faculty in it if needed.

Assessment will be of work, although a student asked to discuss practical projects might also be asked to offer a production or the design of a production.

## 21 months that could ease world shortage

An MSc in minerals engineering is to be introduced at Birmingham University. It will be Britain's first broad-based postgraduate course for potential managers in the minerals industries, the university says.

The 21-month course aims to help alleviate a worldwide shortage of engineers and scientists who have the detailed knowledge and training needed to coordinate the many facets of the industry, and on whom the effective exploitation of the world's diminishing mineral resources will depend.

The course will equip men and women to work in research and development, production, manufacturing, consulting, and industrial minerals, computing, process control and operational research, and preparation and use, fuels and furnaces, iron and steel, and resource management.

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## Unit hopes to broaden outlook of industrial managers

by Clive Conkson  
science correspondent

The Technology Policy Unit at Aston University is to offer a new MSc in social aspects of science and technology from October. Its main aim is to produce administrators and managers with an appreciation of the wider implications of their decisions and a more flexible approach to their work.

The unit's director, Professor Ernest Huxley, hopes the course will appeal mostly to scientists and engineers working (or intending to work) in industry, though he expects some teachers to take advantage of it too. Science and engineering first degrees are preferred to social sciences, though detailed technical knowledge will not be essential.

Industrial firms have been so keen about the course, and their comments have encouraged Professor Huxley.

Students will have the choice of attending for 12 months full-time or 18 months part-time. Full-time

students will spend the first term on lectures, seminars, and practical work. Then, after a break, they will devote time to an individual project to be written up as a dissertation.

The teaching programme will offer a look at the history, sociology of science, and the success of science of innovation. The course then moves to interaction between science and technology, with particular attention to innovation: how does it lead to innovation and how does innovation lead to growth?

The beneficial and impacts of growth will be considered, including 'technology' and 'innovation' in the context of the industrial revolution. A new course will be launched next year.

## COURSES

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Prospectuses and forms for registration may be obtained from local Representatives of the British Council or from the Course Department, British Council, 65 Davie Street, London W1Y 2AA.

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### THIS SPECIAL BOOK NUMBERS 1977

A complete list of the special book numbers planned for the year 1977 is available from The Advertisement Manager, The Times Higher Education Supplement, PO Box 7, News Printing House Square, Gray's Inn Road, London WC1X 3EJ.

## Dorset takes broad look at science

Students at Dorset Institute of Higher Education will be able to take a broad look at science and its relationship with society in a new combined sciences course.

The course, an unclassified ordinary BSc to be taken over three years, will involve a study of scientific concepts and their relation to each other.

Students will be taught how to use investigatory procedures in the laboratory. The aim will be a course which is academic but not too technical in its treatment of particular subjects nor too specialist in approach.

The entrance requirements will be two A-level passes, but HNC and OND qualifications will also be considered. The college hopes the course will prepare students for careers in teaching, the scientific services, industry, local government, Environmental and public health.

The first year will include the study of biology, physics, and chemistry and ecology and complementary studies in almost equal proportions.

## English degree 'equal to any'

In an attempt to cater for the high demand for places on English literature degrees, Exeter College of Arts and Technology has launched a BA degree programme in the subject to assist local students.

The programme, which began last autumn, has proved popular and allows local students to take a course comparable with those offered by universities. The college says the principal aim of the degree is to provide a scholarly education in English literature through the development of an informed critical response.

The first term is preparatory. The next seven each concentrate on a single period of English literature, allowing students to examine various authors in depth, and to compare and contrast them with their contemporaries. The programme allows for considerable progression and continuity.

A spokesman said: "The final award is based on a variety of methods of assessment, including examination papers, a compulsory dissertation, an optional dissertation, and continuous assessment."

Dulwich College of Higher Education is to offer a major and minor course in English literature as part of its BA combined studies programme from September. The validated by the Council for National Academic Awards. The major will concentrate on the post-Renaissance period and have an emphasis on modern drama. Students will have an opportunity to study contemporary writers such as J.K. Murray, Philip Larkin, Muriel Spark, and Seamus Heaney.

## Mathematics and culture

Mathematics is to be studied as a philosophical and cultural subject on a new degree course at University College, Swansea, in October. The course, which will lead to a BA in Mathematics, will aim at increasing students' interest in mathematics and activity by the study of topics which need no previous training in the subject.

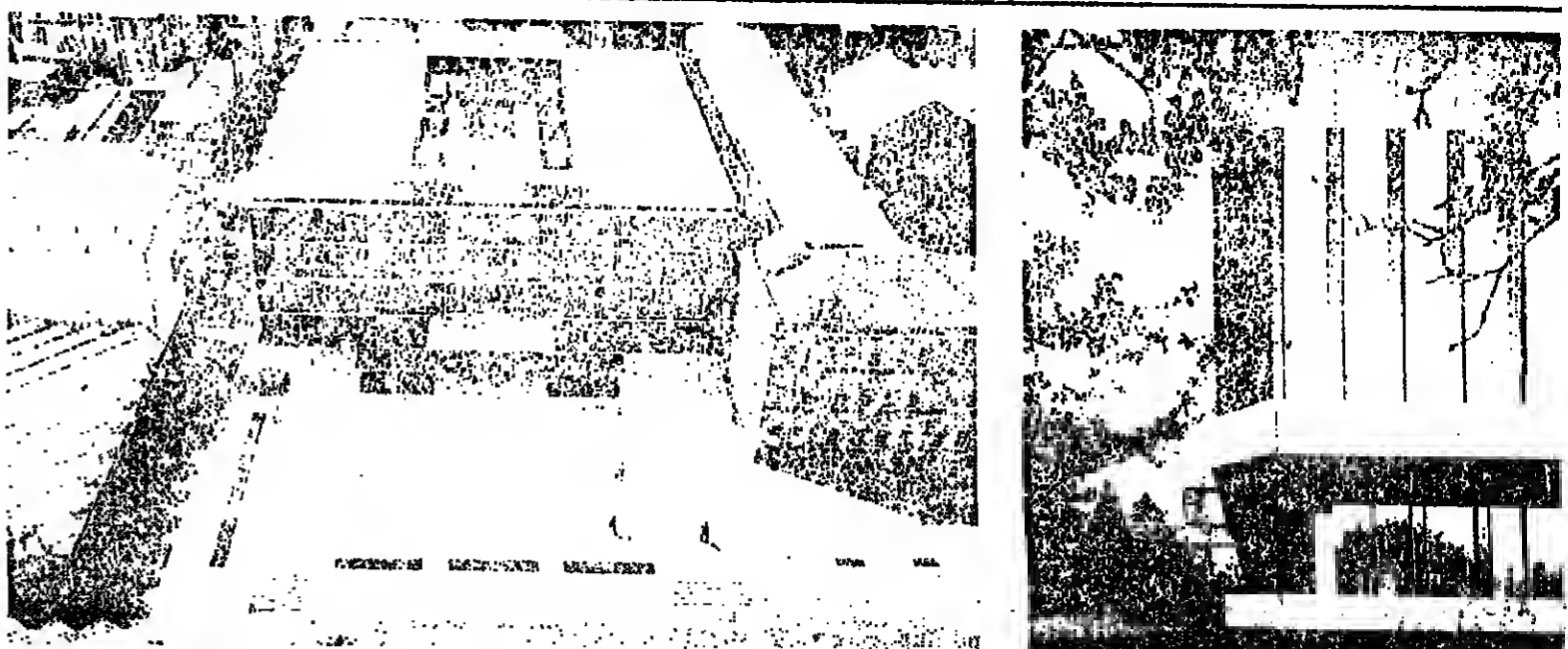
A college spokesman said: "Mathematical ideas and their use have a strong influence on modern culture at many points: the geometry of our buildings, the number notation which pervades our lives, the theory of probability, which has added significantly to our stock of unsolved problems."

The Mathematical Association is offering a diploma which will improve the teaching of mathematics to younger children. The diploma will be offered to teachers in primary schools and will be available from September.

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Tony Aldous evaluates the architectural and environmental features of the award-winning libraries at Nottingham and Leicester universities



The new university libraries: Leicester (left) and Nottingham

# Beautiful buildings where books feel at home

Nottingham and Leicester Universities have both acquired new libraries in recent years; both have won major architectural awards; and little more than a year separated their completion. Both are efficient and attractive buildings—yet Leicester's has certain serious shortcomings. The difference between them represents not inferior performance by architect or client, but in large measure a sharp change in economic climate.

Nottingham's library was University Grants Committee approval and got off the ground as a project in the halcyon days of generous finance and ambitious objectives. Leicester's university library suffered also sharp nip of fiscal frostbite: delays brought it into a period of budgetary stringency and frightening inflation in construction costs.

The Nottingham library, opened in the summer of 1973, was designed by architects Faulkner-Brown Hendy Wilkinson Sumner and cost just over £1m for the building and its equipment. It stands at the highest point in Nottingham's parkland campus and is also used to be regarded—with its tennis courts and lawns—as the sacrosanct green heart of the university. Yet it is undoubtedly the right site for a library in its modern, extended role of learning resources centre.

Its external appearance has a classic simplicity. White concrete panels (each weighing five and a half tons) hang vertically to clad the top two floors (levels three and

four) with narrow slit windows between them. Set back behind them is the continuous wall-in-ceiling glazing of level two, which is ground level at its northern uphill side and below that and partly visible behind gilded mounding is level one, with its overlooking lack at the south-western, downhill corner. The overall impression the building gives is of a cool, white temple of learning. But unlike many modern libraries, Nottingham, with its windows, "declares itself as a library" in the words of librarian Dr R. S. Smith. From outside you can see people using books and you get a reassuring sense of activity. It is palpably a hive as well as a temple.

Generally, as you enter it, on level two, the Nottingham library gives a luxurious impression of space and quality. Levels two, three and four are basically open-plan, the only exceptions being the two floors which run right up through the building, with stairs, lifts, lavatories and vertical runs of pipes and cable. On level two the library administration has been "open-plan"—an arrangement which was met by some initial stiff scepticism but now seems to be accepted and a success. As the library user enters he finds newspapers, bibliography and general reference on his left; on his right is the short-loan collection, a coffee bar, a smoking/relaxation area and, finally, the top of the main staircase. Ahead is the issue desk.

One touch of elegance comes from the acoustic panels which cover the coffering of the ceiling. Particularly on upper floors, in the long alcoves between bookshelves, these triangles of light grey acoustic tiling produce a text effect, disguising the fact that ceilings here are little more than eight feet high, and

break up what would otherwise be rather drab, narrow vistas. Tink and high quality brick finishes to walls, and vinyl covering for the concrete supporting columns also enhance the general impression of quality.

The librarian says he is "thoroughly satisfied and very proud" after four years in the new building. He finds it extremely efficient and describes it as architectural functionalism at its best. His users have responded in the compliment it pays them: in four years there has been no vandalism whatsoever—not even minor graffiti. Dr Smith registers just two reservations. The staircase, which has the same air of luxury and is open at the bottom, invites people to linger and chat. It could have been wider. And he sometimes wonders about the coffee bar. It is as popular as a meeting place that it attracts many students not using the library. Sometimes Fielding Johnson building, has a glass canopy in which plants climb on wires to create a "greenhouse" in the gap; the fourth side is a "temporary" ribbed aluminium well, removable when money is available for extension.

Inside, the Leicester library suffers in three ways by comparison with Nottingham: its wall finishes had to be cheaper, so they lack the elegance and maintenance-free qualities of Nottingham; the loss of one-fifth of the building means that readers' spaces are already heavily used (4,000 readers' visits a day in a university of 4,000 students); and instead of the carefully chosen and designed furniture originally envisaged, the university has had to press into service a hotchpotch of shelves, tables and chairs drawn from the former rankshill libraries.

Where cost allowed the architects to design and specify, as with the

building responded to several subtle changes in organization—from subject division to integrated—is a tribute to its flexibility.

As a piece of "townscape" it is also a considerable achievement. Its site abuts on one side a listed Georgian building, the Fielding Johnson building which houses the university administration, and on the other one of the most famous of post-war university buildings, Strling & Gowan's engineering building. The new library steps modestly back to create a landscaped square with these two distinguished neighbours, and offers a facade of dark, reflective glass in which the exciting roof line of Strling's engineering workshops and laboratories are mirrored with scudding clouds. Behind that glass facade is an insulating layer of air; then the concrete block walls of a fully air-conditioned library. The building's obtrusive Fielding Johnson building, has a glass canopy in which plants climb on wires to create a "greenhouse" in the gap; the fourth side is a "temporary" ribbed aluminium well, removable when money is available for extension.

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long, curving green issue counter, we get a glimpse of the strong and attractive personality they would have brought to interior decor. Yet the building has a strong personality, and one which its users enjoy. "It is almost too popular as a social centre," says the university librarian, Mr Douglas Walker. "It's sometimes a bit too chatty—it could be a more studious place." There is, of course, a balance between activity and quiet. The university libraries are welcoming, stimulating places and not the hushed, intimidating sepulchres of old.

Like Nottingham, the Leicester library ticks its closed stacks, workshops and backroom operations into its lowest floor. The air-conditioning plant is, however, on the roof where it occupies pavilions set in a rooftop lake which serves both as an efficient form of insulation and as an attractive feature, which seen from one of the university's three adjacent towers.

As John Winter, who appraised the building for *The Architects' Journal*, puts it: "Most modern roofs are asphalt with puddles; it seems beyond our skill to get rid of the puddles and asphalt is rather dreary anyway, so it was an entirely sensible decision to make the roof one big puddle." The architect has also saved space and money by using hollow structural columns and beams in lieu of separate air-conditioning ducts.

Leicester University Library (stage one), completed in October, 1974, cost approximately £1m. It won a Royal Institute of British Architects award in 1975. Nottingham University Library has won RIBA Craftsmanship and SCOLU Library Design awards and a Concrete Association Commendation.

## Which shall stay and which shall go?

In the first of a series of articles on teacher training reorganization, Judith Judd examines how the DES decides the fate of colleges

Mr Gordon Oakes, Minister of State for Higher Education, has until June to draw up the final list of colleges and departments of education which will lose their initial teacher training status. The Government has emphasized so strongly that its original proposal, published in January, was only a proposal and subject to consultation, that some changes seem inevitable.

Which of the deputations from colleges and local authorities owing their lives to the Department of Education and Science will be successful?

Which should be successful? During the coming weeks *THE TIMES* will be looking at the Government's proposals region by region and examining the arguments for and against them.

Though the DES has published general criteria for closure, colleges have not been given individual reasons. Some suspect that inspectors' reports, which are, of course, secret, may have played an important part. The Government said at the outset that there would be no criteria and clearly there have been a number.

The DES paper proposed 600 as a viable number for a teacher training unit, but more than a dozen places outside the universities and polytechnics will have less initial teacher training than this. This and other factors will be vital for those colleges to diversify.

An important factor in the DES paper's calculations has been the number to rotate teacher training places to population. For this reason the North and Greater London have suffered particularly because of their falling populations. This policy has already run into difficulties in London where the LEA is, in effect, refusing to fund the withdrawal of the list to the North West London Polytechnic, left

Region	1972		Proposed for 1981	
	Maintained (%)	Voluntary (%)	Maintained (%)	Voluntary (%)
Northern	6,155	72.4	2,345	27.6
Yorkshire	11,335	77.9	3,215	22.1
North West	12,130	68.2	5,550	31.8
East Midlands	5,850	78.0	1,940	22.0
West Midlands	9,265	81.0	3,340	18.0
East Anglia	470	3.3	1,330	68.7
Greater London	8,960	47.4	9,940	52.6
Other South East	13,860	72.6	5,240	27.4
South West	4,970	67.7	3,230	32.3
Wales	5,230	82.0	1,150	18.0
Total	78,995	67.6	37,860	32.4

NOTE: (1) including 250 places to be maintained, and 1,500 to voluntary institutions proposed to be merged with universities.

The number of teacher training places in 1972 and the number proposed for 1981

With just 100 places, all postgraduate polytechnic claims that the DES places which it is to lose are closely linked to the rest of the Department's work.

There are also objections to the DES paper's view that polytechnics are a good place for teacher training. The DES has also had to consider the historic share of places belonging to the churches. According to this, the Church of England has one-sixth of the total, around 7,500. In fact, it receives more than this in the proposed list, with 8,500 places remaining in church colleges and 1,500 places being transferred from church colleges to universities. This has caused some muttering, though it is arguable that those church colleges joining universities will lose at least some of their denominational nature.

Is there method in the DES planning? At one extreme there are those who see the whole exercise as entirely random. At the other is the Conservative MP who says that the majority of the colleges earmarked for closure are to Conservative constituencies and the whole is political. The latter is right in the sense that the Gov. of the Conservative MP who says that the majority of the colleges earmarked for closure are to Conservative constituencies and the whole is political. The latter is right in the sense that the Gov. of the Conservative MP who says that the majority of the colleges earmarked for closure are to Conservative constituencies and the whole is political.

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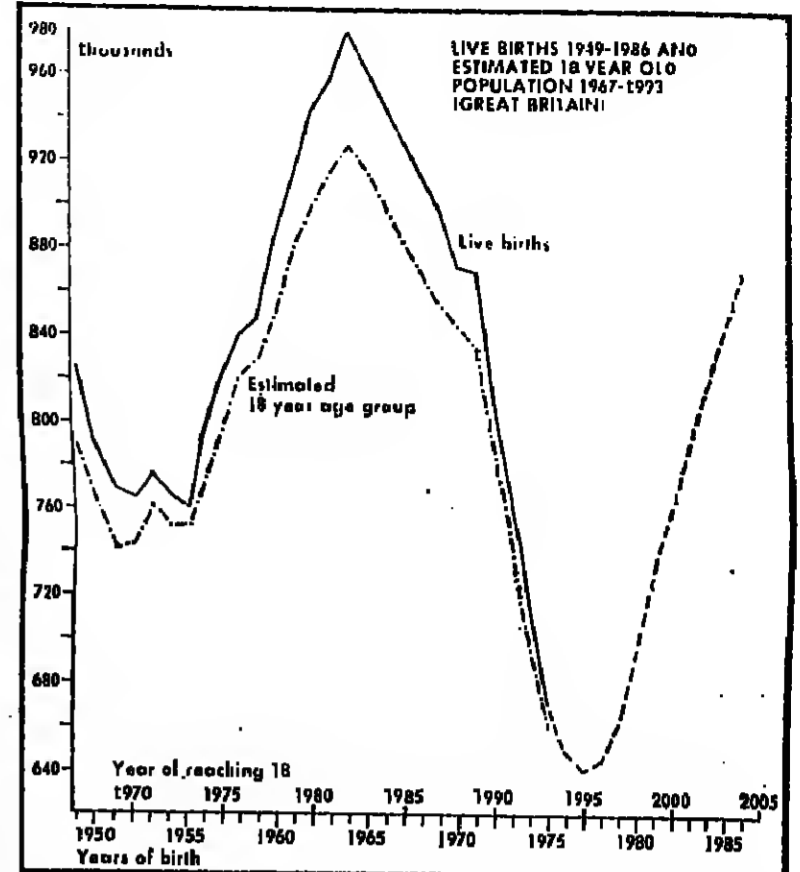
Summary of the Conference of University Administrators' interim review of student numbers

# Projections from a watershed as the public grows sceptical

There are grounds for thinking that higher education is at a watershed as important in its way as that which precipitated the Robbins report. It is more than 16 years since the Robbins committee was established and we are rapidly approaching the farthest limit of projections of student numbers. The educational system has undergone considerable changes and particularly the structure of higher education has been fundamentally altered by the creation of the binary system and by the recent contraction of the colleges of education. The mood too has changed from a relatively optimistic belief in the economic benefits of higher education to a marked scepticism among the general public and the politicians.

To this must be added the impact of the declining birth rate since 1964 will have on the intakes to universities, polytechnics and most other institutions of higher education. Chart 1 shows how the 18-year-old age group is reduced over the period up to 1993 (see below). The demand for higher education is changing. There is a trend towards older students. In 1974-5, it is over 20 per cent of the UCCA who has held a high post or other job before entering university. In 1975-6, 25 per cent of university entrants were aged 25 or over and the UCCA figures for university entrants show that the proportions of older students have increased. In 1975-6, 25 per cent of university entrants were aged 25 or over. More are arriving after an interval between leaving school and university.

This rapid fall is clearly linked, temporarily at least, with the increased use of more reliable contraceptive methods, but the motivational issues involved are very complex. While the techniques of family planning have been well known to and used by parents in social classes I and II for some decades, it is only in the last decade that the family planning campaign has had a marked effect on classes IV and V; classes I and II were already achieving the aim of family size which they regard as satisfactory, the fall to birth rates may stop.



The DES uses "age participation rates" (the proportion of the age group going into higher education) and "willingness rates" (the proportion of school leavers with two A levels entering higher education) to forecast enrolments. We have used information provided by UCCA and OPCS to construct age participation rates based on differential fertility rates for different social classes.

This produces markedly different results from those currently produced by the DES model. It suggests that the fall in student numbers in the 1980s is not as severe as the DES model predicts. A good deal more research needs to be done on this whole subject. Nevertheless, we have tried to produce some forward projections. These are for university populations because we have not had access to comparable data for the polytechnic and other education sectors. Because of the uncertainties we have used two methods summarized below as alternatives A and B. Each alternative has a high and low projection.

Alternative A—Under this alternative the annual intake of home undergraduates aged 18-24 is projected to rise to 20 per cent of the 1970 level by 1990 (high projection). In both projections overseas students are assumed to remain at the 1975-76 level of 30,000 and home postgraduates at 14 per cent of home undergraduates.

Under alternative B a "source cohort" for the total student population is calculated as a weighted running mean of the population of the relative age groups. Student populations are projected making different assumptions about the proportion of full-time men and women students in the source cohorts. The assumptions on overseas and postgraduates are common to A and B. Both alternatives assume the continuation of the Robbins principle that courses of higher education should be available for all those who are qualified by ability and attainment to pursue them and who wish to do so. (Robbins Report, paragraph 31. A and B produce that the actual numbers are less important in this stage than the shape of the curves. All four projections produce a fall in numbers at some point either from 1984 or 1989 and three suggest that the fall will be severe. This would be a situation unprecedented in the postwar period and would be the worst of the permanent secretary to the DES in a recent address to the Society of Education Officers "pose an extraordinarily difficult exercise in planning".

At the DES level the difficulties are obvious. The recent drastic cutting back of the colleges of education has involved the reduction in the number of institutions in England and Wales from 154 to between 70 and 75 and in student numbers from 100,000 to about 45,000. Is this exercise to be a dry run for the rest of higher education?

The chart suggests that such drastic pruning will not be necessary but the implications are severe enough. For the institutions themselves however, the situation could be even worse. Even in a period of steady rates or with increase the level of competition for a non-expanding number of higher education places with corresponding, artificially induced, drops in the willingness and age participation rates.

The national shortfall in applications in science and technology is now a fact of life and has had longer term effects on the subject because within institutions and on the way resources are distributed internally. If such fluctuations were to be combined with an overall fall in student numbers the problems would be infinitely magnified. Some subjects might even attract increased numbers of students thus reducing yet further the numbers available for others. Institutional planning and resource allocation would be increasingly difficult in such circumstances.

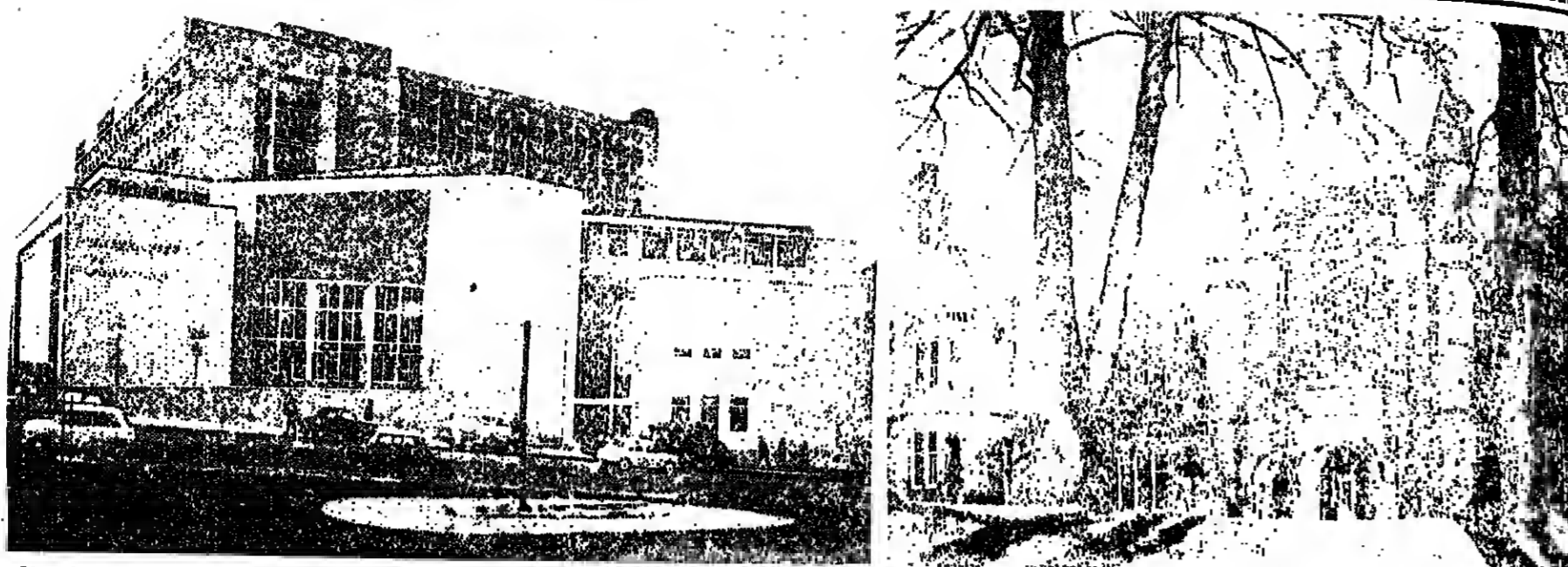
There is some evidence that advanced further education might be considerably more vulnerable than the university sector. Despite the undoubted growth in available places the polytechnics and other education sectors. Because of the uncertainties we have used two methods summarized below as alternatives A and B. Each alternative has a high and low projection.

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New look and the old: Brunford University's modern main premises (left), and the grounds and extension of the university's management centre (right).

## Where town meets gown—with a little expert advice

A layman, according to the Oxford English Dictionary, is a "musider" or "non-expert". Neither description is true in the context of university government, where the lay member is as involved, and has as much power, as any academic or university administrator in making decisions on the institution's future; how its money should be spent and what its policy should be. With the exception of Oxford and Cambridge, every university in the country has on its court and council a sizable proportion of lay members—local government representatives, business men, industrialists, professional and every decision taken in the university, even by senate, the academic body, must be ratified by council and court.

At Bradford University, the council meets once a term. The laymen comprise almost half of its 30 or so members and have full voting rights with the rest. The work, which is undertaken voluntarily, is not just a matter of the one meeting. The council has several standing and sub-committees, many of which are chaired by laymen, and time involved both attending meetings, collecting information, talking to students and staff and attending functions could be at the least one full day a week.

Mrs D. Birnall, for instance, a local councillor, has an impressive list of commitments: she has been a member of the monogamous committee for the sports centre, and is now a member of the management committee of the university's communal building (used by both staff and students); a member of the joint committee of council and senate on welfare and the environment, and a member of the sub-committee on safety.

In addition, she attends many of the public functions of the university: concerts, plays and lectures, partly from interest, partly to keep in touch with what is going on. Her work on the welfare and environment committee involves her in further sub-committees dealing with physical education and catering and on part of her work for the latter she recently went through to all the contents on the campus to try the food there, "so that I could see whether they were getting value for money".

The lay members' reasons for becoming council members vary. All consider it an honour; there are many in the city who would jump at the chance to be a council member. One said, and all seem genuinely interested in how the university works. Some come specifically as local government nominees; others are appointed by the City of Bradford Council, one by the County West Yorkshire Council, one by the Yorkshire and Humberside Association of Education Authorities and four (non-academics) by the university court the day governing body of the university which also contains many lay members and meets once a year.

Others represent local interests, and include a former retail pharmacist, a headmaster, a chief executive of Champion Associated Weavers, a master baker, a college of education principal, a solicitor, a farmer and

former member of the electrical services industry. Everything lay matters directly connected with the content of a course is discussed. Relationships with the academic members of council are cordial, and the lay members will there is no division of council and chief executive of interest. Mr A. J. Thayne, chairman of council and chief general manager of Halifax Building Society, says this is partly because of the unspoken understanding that the lay members do not interfere in academic matters.

They do not, anyway, see themselves in antithesis to the academics or the university so much as a part of it. They view their role as involving the university in the town. The benefits are mutual. The lay members, because of their contact with local government, business and commerce, can bring influence to bear so that money is channelled to the university. This, as Mr Thayne says, is the main reason why it is in the city's interest to promote the development of the university.

They also act as a channel of information between firms and researchers, directing the former to appropriate academic for advice, and helping academics make suitable contacts.

Naturally, selected lay members of council, together with selected vice chancellors, form the Universities Authorities Panel (of which Mr Thayne is at present chairman), the body which represents universities as employers in negotiations with academic staff salaries.

## Burnham or not, the DES holds most of the pay cards

Would the abolition of the Burnham pay negotiating machinery mean more money for further education teachers? The answer is probably not. But the National Association of Teachers in Further and Higher Education, which is pressing the change, regards it as a long overdue administrative reform that could eventually benefit teachers in the hours they work and previous for their retirement.

In the short run, questions of money go rather academic. As long as the social equilibrium lasts, there is little scope for pay bargaining. As long as the Burnham system of teachers' salaries by the House of Commons is not cooled by the settlement of differential rates, there will not be the frustration teachers knew in the early 1970s.

What the employers—the local authorities—and the teachers through NATFHE, are agreed upon is the need to bring future pay negotiations and bargaining on a single basis. The Burnham machinery, as laid down by the Remuneration of Teachers Act 1965, concerns pay alone; in ad hoc committees.

Burnham, according to Mr Gordon Cunningham, education officer of the Council of Local Education Authorities, is an anomaly. Why should teachers' pay be regulated by a statutory committee when nearly all other local government employees get by with joint councils free of legal ties? NATFHE officials ask why teachers alone, with the exception of the police, have their pay negotiations so closely regulated by the Government.

What NATFHE would like is some pay body like the Health Service's Whitley councils, bringing together on one side a panel of National Association of Teachers in Further and Higher Education, and on the other a confederation of employers. Paradoxically, Whitley councils and similar bodies have come out of the same historical mould as Burnham, and during the First World War and afterwards for the state to step into pay bargaining for the first time.

Disatisfaction about Burnham sharpened during the 1960s, particularly among primary and secondary school teachers whose pay is settled in a parallel committee to that for further education. Part of the trouble was dissension among the teachers' own bodies, notably the National Union of Teachers and the Association of Schoolmasters, but there was also the feeling that by sitting in the negotiations from the outside the Department of Education weakened the teachers' hand.

In the early 1970s, both the NUT

and the Association of Teachers in Technical Institutions floated schemes to abolish Burnham and replace it by a national Joint Council for Education. For the school teachers, one stumbling block was Sir (now Lord) William Alexander,

the secretary of the management panel of Burnham. Concern with machinery was stirred by the negotiation of London allowances for school and further education teachers and the divisions between the primary and secondary sectors of the machinery. Then came the Education Act in 1974-75, and in the attendant euphoria concern with machinery diminished. Concern with NATFHE's newly discovered concern with Burnham is because the pay policy favoured by the association's bargaining strategy, which has had to find an outlet in working with the machinery.

The statement issued by a recent meeting of the NATFHE national council made the following points: negotiations on salaries and conditions ought to take place in a common framework, which ought not to be statutory; the negotiating panel ought to contain teachers and employers' representatives alone, with no Government participation; the new national joint committee should have an independent chairmanship nominated by the Advisory Committee on Salaries and Pensions, and the setting up should be at a level which would be an authority level in an effective committee to provide an effective "potter procedure" which, NATFHE says, is lacking from present arrangements.

It is worth noting that NATFHE is likely to get the full backing of Burnham, the Association of Principals of Colleges and two small associations, the National Federation of Continuation Teachers' Associations and the National Society

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Disatisfaction about Burnham sharpened during the 1960s, particularly among primary and secondary school teachers whose pay is settled in a parallel committee to that for further education. Part of the trouble was dissension among the teachers' own bodies, notably the National Union of Teachers and the Association of Schoolmasters, but there was also the feeling that by sitting in the negotiations from the outside the Department of Education weakened the teachers' hand.

In the early 1970s, both the NUT

and the Association of Teachers in Technical Institutions floated schemes to abolish Burnham and replace it by a national Joint Council for Education. For the school teachers, one stumbling block was Sir (now Lord) William Alexander,

the secretary of the management panel of Burnham. Concern with machinery was stirred by the negotiation of London allowances for school and further education teachers and the divisions between the primary and secondary sectors of the machinery. Then came the Education Act in 1974-75, and in the attendant euphoria concern with machinery diminished. Concern with NATFHE's newly discovered concern with Burnham is because the pay policy favoured by the association's bargaining strategy, which has had to find an outlet in working with the machinery.

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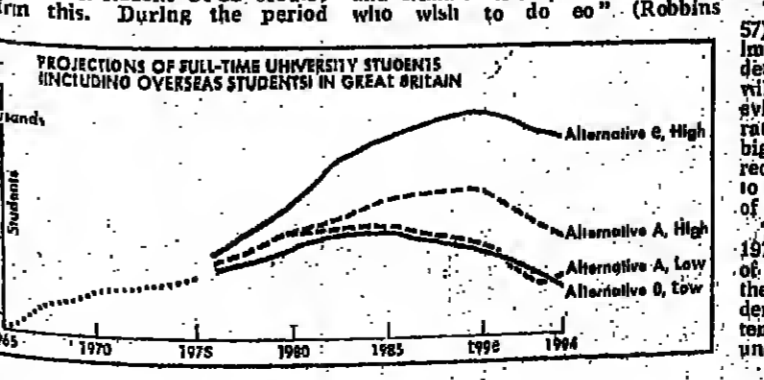
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Lord Alexander: stumbling block



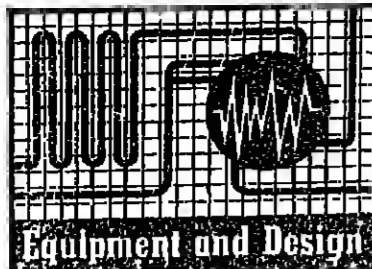
Under alternative B a "source cohort" for the total student population is calculated as a weighted running mean of the population of the relative age groups. Student populations are projected making different assumptions about the proportion of full-time men and women students in the source cohorts. The assumptions on overseas and postgraduates are common to A and B. Both alternatives assume the continuation of the Robbins principle that courses of higher education should be available for all those who are qualified by ability and attainment to pursue them and who wish to do so. (Robbins Report, paragraph 31. A and B produce that the actual numbers are less important in this stage than the shape of the curves. All four projections produce a fall in numbers at some point either from 1984 or 1989 and three suggest that the fall will be severe. This would be a situation unprecedented in the postwar period and would be the worst of the permanent secretary to the DES in a recent address to the Society of Education Officers "pose an extraordinarily difficult exercise in planning".

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The group's report was presented in the annual CUA conference at Swansea. Copies may be obtained from Michael Paulson-Ellis (Saraclyde) at 50p.





### How science will go into orbit

H. S. Wolff

"A versatile scientist is required to work for seven days in a zero gravity orbiting laboratory. The duties will include the operation of a variety of experiments developed by teams of scientists from many different countries. No previous space flight experience is required, but applicants must be under 55 years old in July, 1980, and be in good health. Training will be given in Europe and the USA. Apply to ESA..."

While it is unlikely that an advertisement on quite these terms will appear in the £6,000 plus appointment pages of *The Times*, payload specialists, as they will be called, will be needed for space lab missions starting in 1980 and continuing at least through the next decade.

The Spacelab programme in which the European Space Agency is associated with NASA must rank as one of the biggest, International collaborative science and technology project, which the world has seen. Yet, perhaps understandably, in a time of shrinking budgets, it has received relatively little publicity, and enthusiasm in Britain has been muted.

The concept of Spacelab differs radically from previous manned-space missions. In the past almost all hardware carrying the crew was lost, either by burning up in the atmosphere or continuing to orbit in space. In the Spacelab programme almost all of it will be recoverable and re-usable for many missions.

The key is the NASA shuttle looking rather like a medium-sized aeroplane with abbreviated wings and a fuselage which can be opened along the greater part of its length to expose a cargo bay. The shuttle is put into orbit by large booster rockets, which detach at the appropriate phase of the launch and drop into the ocean for subsequent recovery. It then remains in orbit around the earth for mission durations of between seven and 30 days, re-entering the atmosphere in a controlled manner.

flies back to his base, and lands on a runway. Inside the cargo bay a variety of payloads can be carried ranging from a number of pallets on which instruments such as telescopes can be mounted, to a laboratory, or independent space craft which can be placed into orbit and left there possibly for recovery on a later mission.

One of the major European (ESA) contributions is the design and construction of a versatile laboratory which can be used by a number of disciplines. The shuttle will be operated by two to three professional astronauts while the experiments will be performed by two to four scientists who will work in the laboratory and live in the shuttle. They will not require any specific astronaut training nor will the stresses during launch or re-entry incommode anybody in normal health. The internal environment, with the exception of the absence of gravity, will be comparable with that of a terrestrial laboratory.

Because of the relatively low forces during launch (maximum about 3g), and the general facilities in terms of power supplies, permissible size and weight, and manning which are provided, the equipment to be used for experiments should be less expensive and less specialized than that which has been associated with space science laboratories.

The instrument racks which line the inside of the laboratory are mounted on rails and can be removed as complete units. This means that equipment can be developed and tested in the ground station responsible for the experiment and integrated into the space laboratory only shortly before launch. It also facilitates the quick turn-around of Spacelab which eventually will be expected to fly several times a year.

The largest version of the laboratory is equivalent to a cylinder about 17ft 6in long, with an internal diameter of about 12ft. Obviously experiments to qualify for inclusion in a Spacelab payload space conditions must be essential for their performance.

Astronomers and solar physicists have always been frustrated by the distortion, shimmering and radiation absorbing atmosphere through which they have had to make their observations. Studies of the upper atmosphere became easier if one looks at it from the outside, and the surface of the earth can be examined by a variety of means.

For some scientists engineers the really fascinating feature of the space laboratory is the virtual absence of gravity (well below 0.01g). To the materials scientist this means that substances can be melted in suspended globules free from any contaminating contact with crucibles and crystals can be grown undisturbed by convection currents which otherwise occur in any fluid in which a temperature difference is maintained.

Biologists and medical scientists appear to have the double joy in that they will expect to make con-

tributions to science as well as solving some of the operational problems of maintaining man in space.

It is known that zero gravity, at least initially, produces acute physiological disturbances which will reduce the efficiency of individuals exposed to it. It is important therefore in the context of a manned-space programme to investigate the mechanism of space sickness and to devise counter measures. It is suspected that the means of vestibular stimulation, that is the vestibular system, is certainly implicated in causing space sickness, but it is also of great scientific interest to study it within the constant limits which is normally present.

One of the most elaborate histological experiments which will almost certainly be flown on the first mission is the vestibular sled. It consists of a carriage which can carry a man in various orientations relative to the direction of motion. The carriage can be accelerated along the two rails and brought to rest again in a programmed manner thus producing known g forces. In a number of electro-physiological recordings will be collected together with a registration of eye movements and subjective reports of the effects.

Later when animal experiments become possible actual recordings will be made from the vestibular system.

Other physiological effects which will be studied on the payload specialists are venous pressure, cardiac output, the ECG and the EEG, the latter particularly during sleep, and the ability to discriminate between objects of the same size and shape but of different mass.

Botanists will have the opportunity to investigate the tropic effects of light and gravity using growth chambers in which the environment can be very precisely controlled. The spectrum of light and heavy particle radiation outside the atmosphere is difficult to replicate on earth; a number of experiments will be flown in which seeds and bacteria will be exposed under conditions where the particle tracks can subsequently be reconstructed with great accuracy. The return to earth of the effects of radiation damage can then be correlated with the type of particle and the target area.

I believe that it is reasonable to take advantage of the opportunity to investigate the new territory of zero gravity; the fact that the early experiments are trivial may be the more indicative of the value or extent of the new territory than the first actions of an explorer when reaching a new continent allows the hand of the beach to cut through his fingers or who shakes the trees.

The author is at the Clinical Research Centre of the Medical Research Council.



The vestibular sled: a device to test what happens to the body when it reenters the gravitational field.

### Safety and the hidden hazards

Sheila McKechnie

The hazards which affect laboratory workers are often concealed partly because technicians are dispersed in small groups and partly because the hazards are the responsibility of a number of different departments of the production employees.

Technicians, however, have problems which are quite unique and apart from codes of practice issued by the Department of Employment (many of which are out of date) there is little regulation to set standards.

Under the 1974 Health and Safety at Work Act, many laboratory workers were brought for the first time under the minimum protection of the new Health and Safety Executive. This new safety executive inspectors can now take action in certain cases to issue "improvement" or "prohibition" notices. While this is a step forward, it is a great need for regulations in laboratories to improve standards and certify the Association of Scientific Technicians and Managerial Staff will be pushing

the Health and Safety Commission in this direction. One of the most pressing problems is the handling of dangerous chemicals. Many substances used in laboratories are carcinogenic but yet it is our experience that this information is rarely passed on to the technicians at the bench.

Programmes for training technicians rarely deal in depth with health and safety matters. All too often verbal instructions are given without the back up of written instructions. This would apply equally in university and industrial laboratories.

The attitude of the vice-chancellor committees to health and safety has hardly been exemplary and works to inhibit any joint approach to solving practical problems. The universities are exempted to the extent that they should be exempted. They were the experts operating on the "frontiers of science".

Unfortunately most accidents do not happen on the "frontiers" but on the more mundane level of routine procedures. Now that they are covered by the act (whether they like it or not), they are currently making submissions to the HSE, to bring standards up to date.

While ASTMS insists that the major responsibility for the provision of a safe working environment is clearly the employers, no safety rules are workable unless they are jointly agreed. Rules and procedures must be acceptable to those working in the area. We have had

too much experience of blanket rules which are unworkable and seem only to apply when it suits the management. Joint safety committees will have a major role in the control of an effective committee with good trade union representation. Such controls do not hold back scientific development but they ensure that work takes place in conditions which protect the employees concerned.

Trade union attitudes to health and safety are changing. The health risks that affect laboratory workers are considerable. Hepatitis, among hospital technicians is widespread. Allergies from working with laboratory animals is a major problem. The often quoted statistic that the average life expectancy of technicians is only 55 years is a great concern. It is not enough to deal with problems piecemeal, they are to be tackled and eventually eliminated by progressively better standards.

We have had no indication that employers will take such steps without pressure from the trade unions concerned. Without trade union backing many technicians are isolated and unable to take action in the face of threats to their promotion prospects and even employment.

Improvements will, of course, cost money but the alternative is to allow technicians to take risks and bear the cost personally in terms of health and accidents. This situation, we feel, is no longer acceptable. The author is health and safety officer of ASTMS.

genetic manipulation. In the face of considerable opposition from the scientific community such experiments are now subject to the control of an effective committee with good trade union representation. Such controls do not hold back scientific development but they ensure that work takes place in conditions which protect the employees concerned.

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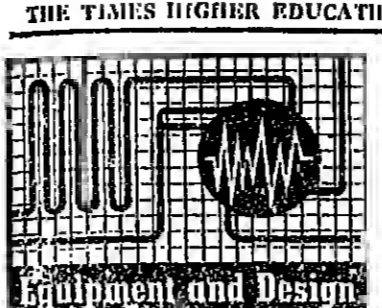
### Congress sets standards for the future

Michael Binney

The future training of the technologists and technicians in the United Kingdom is the subject of an important Bill which has been introduced into the House of Commons. It is the first of a series of Bills which will set standards for the training of technologists and technicians in the United Kingdom.

The Bill is really an extension of the Clinical Laboratory Act which was passed in 1967, but never implemented. Among other things, it sets up a new body to regulate the training of technologists and technicians in the United Kingdom.

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### Where rats can age in comfort

J. G. Phillips  
G. Walker

The building requirement for a colony of aging rats is unambiguous and at first sight simple. A house in which a breeding stock provides a core colony of animals which live under controlled conditions to the end of their natural lives and provides at the same time a supply of animals at any selected point during their lifespan.

The Wolfson Laboratory for Research in Gerontology at Hull University has replaced a smaller, temporary laboratory was built as a result of a £250,000 grant made by the Wolfson Foundation in 1974 to Professor John Phillips of the University of Hull and Professor Denis Bellamy of University College, Cardiff.

### Bangor copes with growth

P. Brindley

With the continuing increase in the numbers of students being accepted by universities and other places of higher education, many institutions are experiencing the problem of finding sufficient space in which to teach. There have also been problems associated with changes in the content of courses, brought about by the employment of new teaching staff and the introduction of new scientific techniques.

The School of Plant Biology, University College of North Wales, Bangor, is probably the largest botanical department in Britain, with over 60 postgraduate students pursuing a wide range of research projects, and 200 undergraduate students.

The school was formed in 1967 by the amalgamation of the previous departments of botany and agricultural botany, and at that time student numbers presented no immediate problem, but it was obvious that some changes would soon become necessary in the teaching laboratories. These consisted of a physiology laboratory with a suite of two large laboratories holding 20 and 48 students respectively.

Within three years the physiology laboratory was being used by 200 students, and all teaching practical classes was restricted to the two larger laboratories. One of these was equipped for classical botanical practicals, including the use of microscopes and the examination of specimens, with large wooden benches, 30in high, provided with gas, a very small gasometer, and water taps, and power being available only from 2 amp outlets; these benches were changed on a wooden stand run along the length of each bench. Whilst these benches had perhaps no ideal for their original purpose, they were far from suitable for the varying requirements of the new courses being taught. This, together with increased student numbers, made re-benching essential. Each type of course had its own

requirements—microscopy needed a bench height of 30 in with a vibration free top and power points for the lamps. Students performed psychology experiments whilst standing and therefore required a bench height of 36in, with adequate supplies of all accessories. Whilst microbiological work involved both sitting and standing, needing gas and power, and a bench top with as little obstruction as possible which could be wiped down with disinfectant sprays to make a clean working surface.

Other requirements included space for stools under the benches, a level of floor which was level and free from vibration, adequate storage space for microscopes and lamps when not in use, ease of access to services for repairs, and, most important, an increase in the number of working spaces.

Having examined manufacturers' catalogues and looked at benches in other departments it was decided that the varying needs could be met only by purpose made benches, involving some compromises. For example, bench height was fixed at 33in to suit as much as possible both standing and sitting. By slightly reducing the width of each bench it was possible to add an extra row of benches, thus increasing the number of student places from 80 to 112. All under bench space on the original benches was taken up by cupboards, with regularly spaced knee-holes for students' legs—to allow from existing ones.

In the centre of each group was a water stand with two hot taps, having screw connections to allow the attachment of a nozzle or a suction pump. The taps delivered hot or cold water into a drip tray on an oval drip cup set into the bench top, and gas was supplied by a two-way bench cock, also having the water standard and the drip cup. On each side of the water and gas points were two 13 amp switched sockets raised from the bench top on an inclined wooden block.

Stripping off the old benches and fitting the new, together with all the modifications to services, took only five weeks. The benches have proved most satisfactory, despite the compromises demanded by the requirements of the various courses, and the light six years' use it is doubtful if their design could be improved.

The author is laboratory superintendent at the School of Biology, University College, North Wales.

circulation requirements, are kept low. The total enclosed space is 1,061 sq ft, of which 29 per cent is non-usable. The ducts and plant rooms, at only 10 per cent of the whole, reflect the process of disciplined planning.

The fire-stores building holds the research laboratories, the plant rooms and the animal house entry locks on the ground and top floors, and has an animal house on each of three intermediate floors. It is possible to isolate each animal house and gain independent access to it from the adjoining building. The large animal rooms offer flexibility in use, are labour saving, and ease the air flow problems. Several small rooms are included for special work.

The fire alarms operate at a low frequency which can be heard by the staff, without disturbing the animals. The roof and walls have a low thermal conductivity mainly to prevent solar gain affecting the animal

rooms. The structure is heavy in order to absorb vibration, and detailed construction work was scheduled to prevent vibration of building noise within the air-tight animal spaces. In addition, metallic materials which tend to harbour bacteria have been avoided. The surfaces absorbed a third of the total building costs. The building is air-conditioned, with full filtration, heating, cooling and humidity control. The treated air is filtered at a minimum set temperature to each animal house where it receives a boost heat determined by the animal density and activity.

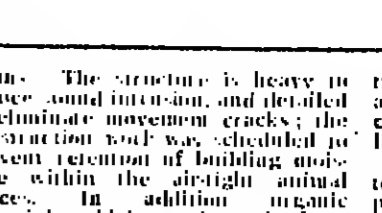
Over 20 air changes an hour are needed to keep the conditions right for the animals. The air pressure increases progressively from outside clean well, to workroom and to animal rooms, so that the flow of air is never towards the animals. Great care has been taken

to ensure that the condition of the air in and around the individual animals remains within the tolerable limits. The sophistication of the air system is more than justified by the proposed density of animal occupation. The light fittings in the main animal rooms are located within the transport animal work ducts and are controlled either manually or by local time clocks. A standby generator supplies the lighting in the event of main failure.

Attention has been given to reducing the non-scientific work of the technicians, and the finishes in the building continue an atmosphere which highlights the importance of hygiene in their work. The cages are standard and interchangeable, the racks are easy to service and move. Buses with disinfectant water supply and associated cleaning equipment are provided in strategic places. Work surfaces and sinks are set clean of the walls, and cupboards clear of the floor to facilitate cleaning. Food is delivered to the building by tanker and blown into a roof-level hopper from which it is piped to each animal work duct and distributed in mobile multi-hoppers. The waste drops through pipes in a ground-level waste container. Drinking water is piped to each of the 6,000 cages.

The research laboratories are regarded as experimental workshops with surface-run services leading to the modular bench unit. This permits alterations to the layout of the equipment with a minimum of disruption of the research scene changes. The adjacent offices include a link to the university's computer in which the animal records will be maintained.

Movement of scientific staff across the barrier is reduced by a closed circuit television link with the animal houses and inspection of the building by visitors and maintenance staff can be achieved in this way. The author is the joint director of research and the buildings officer of the Wolfson Laboratory for research in gerontology.



### Simplify the Teaching of the Mechanical Properties of Materials

They alone combine the accuracy, test range and permanent recordings that you must have. The kits contain all the equipment you need, including specimens in metals and plastics. Comprehensive notes prepared by D. K. Bowen (Lecturer in Materials Science, Warwick University) are provided as an aid to study and teaching. A wide range of materials can be tested and Imperial is available in SI, metric and Imperial units. The recorder gives a permanent record of tests. The lecture notes and kits provide a complete teaching course.

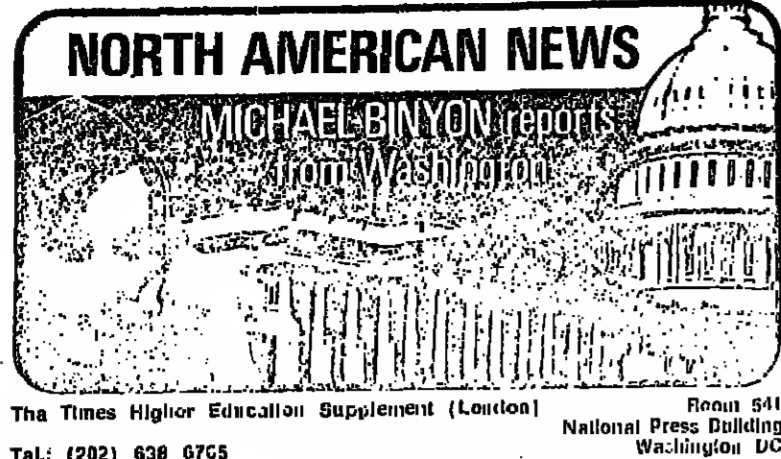


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### Call for new economics which puts people first

The only answer to the present and projected uses of developed human resources was a new economics which took human potential as its starting point. Mr Willard Wirtz, a former secretary of labour in the Kennedy and Johnson cabinets, told a general session...

Developing a theme that has had considerable impact since the publication of his book *The Boredom Economy*, Mr Wirtz said that a new economics would start by making the fullest use of talents inside people instead of starting from the most profitable exploitation and misuse of elements inside the thin crust of the planet. This would mean a rethinking by all major companies of their comparative drain on natural resources and their use of educated human resources.

Such a new economics would recognize fully the necessity of a system which is self-supporting and which provides for and depends on growth. But the notion of growth would include different elements from those reflected in the gross national product in history or the world. It would refer rather to those elements of growth which include more closely with human purposes and our underlying ideals as a civilization.

### Time for understanding

Education should encourage society to put more value on time and cease measuring people's worth solely in terms of productive work. Dr Krepes, United States secretary of commerce and a former vice-president of Duke University, told the conference.

It was not enjoyed as long as society viewed productive work as the measure of man. Society acclaimed the elderly who continued to work and paid less attention to those who enjoyed the leisure they had earned. Technology was directed at saving time. But its impact had been subverted: instead of allowing a calmer and more leisurely life, the pace of life had quickened in factories and society. Efficiency had robbed work of any breadth, success had come to be seen as predatory exploit and labour had become dishonourable.

Our correspondent reports from the annual meeting of the American Association for Higher Education, held in Chicago last week

## The overeducated American

The phrase "the overeducated American" has caused considerable controversy since it was first used a few years ago to describe the phenomenon of too many university graduates for the number of depressed jobs available.

Argument has swirled around the facts: how many graduates can the economy absorb? and around the implications: is the purpose of education to train people to get high-status jobs? In the past year a new dimension has been added to the debate with the contention that the economic return to an individual who has received higher education is falling fast.

The debate is of critical importance to new graduates, many of whom are seeking jobs for which a degree is not essential. But higher education as a whole has been reluctant even to consider whether fewer people should go to college. The provision of suitable jobs is a concern of industry, say the academics. Industry in turn has tended to shirk off responsibility for any mismatch between qualifications and openings. It has been a dialogue of the deaf.

Last week saw one of the most important attempts to come to grips with the problem. The annual meeting in Chicago of the American Association for Higher Education, one of the largest gatherings of university administrators and researchers in all sectors of higher education, spent three days debating the relationship between education and work. Significantly, the theme of the conference was "Help Wanted".

The conference raised far more questions than it answered. It also was clear that the problem is not temporary, nor amenable to easy solutions. A number of speakers, including Mr E. F. Schumacher, chairman of the International Technology Development Group in London, and better known in the United States as author of the best-seller *Small is Beautiful*, suggested that education had to reexamine the philosophy on which the system had been built, and that the past two or three decades. People had to ask the basic questions:

### What work is 'good'—what work is 'bad'?

The question of "good work" and education for good work could not be discussed without asking "What is meant by 'good' work?" and "What is the purpose of his life?" said Mr E. F. Schumacher, the keynote speaker at the conference and author of the influential book *Small is Beautiful*.

Education for good work was quite impossible. Good work could not be distinguished from bad work, if human life on earth had no meaning or purpose. But the metaphysics of the great civilizations did offer guidance. Man's greatest need, as a spiritual being, was primarily and inescapably to work. It was a need of other people and with other sentient creatures; as a person it was concerned with developing itself.

What is the purpose of learning? What makes work satisfying? How should education prepare people for jobs that are dull and undemanding? The dimensions of the problem were forcefully laid out by many speakers. Mr T. E. Bowden, director of education relations for the American Telephone and Telegraph Company, said the goals that education had pursued for the past 25 years were now out of date. One was the production of more and more educated people, when it was now clear that there was a limit to the numbers that could be absorbed.

Another was the notion that the more higher education there was, the better life would become, when it was now clear that higher education was an elitist enterprise and not everyone was suited to it.

Mr Bowden said universities and business were dependent on each other. They both had an interest in the survival of higher education, and, since they had both brought about the present crisis, it was up to them to try to resolve it.

But how to do this was a question that puzzled many. Some speakers—among them the influential former secretary of labour, Mr Willard Wirtz—saw a total reorganization of the nature of work as the only solution, with more emphasis on people and less on production, a change in work patterns and a new system of economics.

A question many raised was whether schools and colleges were sites of socialization for the work place, or whether they were agents of change which could force a new attitude in work. Was "career education", for instance, a real attempt to prepare people for work without raising false expectations, or was it just a way of preparing people for unemployment?

A number of fundamental and, in the American context, revolutionary changes in the organization of work were proposed to overcome the alienation of the underemployed. Speakers talked of reorganizing the work place, of introducing craftsman-like skills into labour and breaking up large corporations into smaller units.



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role education—especially in the sciences—was to play an increasingly bleak. If the secretary of state for universities does not agree to extra cash for the ailing institutions, the authorities say they will either end the year with massive debts or have to start closing classes and making staff redundant.

Paris is rather worse off than provincial universities and Paris VII alone says it would need another 100 million francs on top of its budget of 31.9m francs in order to carry on normally. Paris VII, the second biggest French university with 1,650 teaching staff, has slashed its budget by 3m francs from its capital reserves and used 1.7m francs of its research funds to cover everyday running expenses.

The president of the university, M. Yves Le Corre, says there has been a 20 per cent increase in the cost of central departments but that the 200 research laboratories and the six independent buildings which comprise the university are extremely expensive to maintain.

The state simply does not get more money. Of the 33,000 students and they are facing cuts of up to 80 per cent in courses in some disciplines such as urban studies.

One solution which has been advanced and bitterly opposed by the university is its transfer to the suburbs, but its troubles stem from the beginning of the year when the secretary of state slashed the number of supplementary hours paid by the state—90,000 to 70,000.

The crisis in the universities has been building up ever since Mue Alice Soulier-Seldé announced her controversial budget designed to force universities to adopt a new internal policy by which at least 15 per cent of the credits for supplementary hours for its 33 per cent of the student population, and that years of unfair privilege have been ended.

### More relevant courses sought by US chief

The world of work had changed but it was not clear what was to be done about it. The new Higher Education Commission, the commissioner of education, said that education had been too much concerned with the importance of work to our lives and our careers.

### More relevant courses sought by US chief

Education for good work was quite impossible. Good work could not be distinguished from bad work, if human life on earth had no meaning or purpose. But the metaphysics of the great civilizations did offer guidance. Man's greatest need, as a spiritual being, was primarily and inescapably to work. It was a need of other people and with other sentient creatures; as a person it was concerned with developing itself.

Mark Webster reports on the dilemma facing French universities

## More cash or fewer classes

The financial position of a number of French universities is becoming increasingly bleak. If the secretary of state for universities does not agree to extra cash for the ailing institutions, the authorities say they will either end the year with massive debts or have to start closing classes and making staff redundant.

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### Big increase in overseas students

There were 48,700 foreign students registered at West Germany's higher education institutions in the winter semester 1975-76—equivalent to 6 per cent of the entire student population.

Although the absolute figures just published by the Federal Statistical Office show an increase of over 40 per cent of foreign students since 1971-72, their percentage has remained roughly the same, since the number of German students has increased by about the same percentage over the period.

### Republic of Ireland Exams threatened by strike

A long-standing dispute about the marking and grading of examination papers in the mooty third-level regional technical colleges in the Republic has threatened to paralyse the system. Before they are admitted they have to prove that they possess an adequate knowledge of German; otherwise they must first attend special courses in German for foreign students.

ings and material, the stabilization of French personnel by giving them longer contracts, and research, which got an additional 63 per cent, taking it from 7m to 13.5m francs.

More Soulier-Seldé made it clear from the start that her budget was to be "straight things out" and above all she wanted to end the favoured position of Paris compared with the provinces in the matter of funds for complementary hours of teaching. Paris was getting 40 per cent of the total available for the students, while many provincial universities, especially some of the smaller ones, were very badly off.

The redistribution was based on a formula devised by the Centre for Analysis and Research of Crisis in Higher Education (GARACES). It compared the number of hours needed by each establishment (calculated on the requirements of each discipline) with the number of hours which could be ensured by permanent teaching staff. To that was added a 10 per cent margin for "educational innovation".

The new formula meant a massive overall reduction in payments of 18 per cent, but it was up to 20 per cent for 20 universities and soared to 68 per cent for Toulouse-Mirail, 60 per cent for Grenoble-III, and 40 per cent for Aix-Marseille-I. The other hand 11 of the smaller universities were given increases ranging from 15 per cent up to 210 per cent, for Compiègne.

Mme Soulier-Seldé offered two conditions with the cuts. She included the proviso that there could be more money if a university could prove the need and that cuts would allow the rate of pay for supplementary hours to be raised to 20 per cent from 15 per cent. The rate has been altered since 1971 and much outside work is paid at 11 francs an hour, which is four francs an hour less than you might expect for "charring".

Mme Soulier-Seldé answers the unease felt by saying that at least Paris now gets a fairer allocation of only 35 per cent of the credits for supplementary hours for its 33 per cent of the student population, and that years of unfair privilege have been ended.

### Sweden No improvement in graduate unemployment figures

HOPE OF a further improvement in graduate unemployment have been dashed with the release of figures showing joblessness of six months after graduation to have risen distinctly last year.

The latest survey by the Science and Humanities Research Council—of those graduating in autumn 1975—reveals that almost one in six students seeking work were still without jobs last spring compared to slightly more than one in 11 a year earlier.

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A long-standing dispute about the marking and grading of examination papers in the mooty third-level regional technical colleges in the Republic has threatened to paralyse the system. Before they are admitted they have to prove that they possess an adequate knowledge of German; otherwise they must first attend special courses in German for foreign students.

The universities admit that to some extent their criticism is justified. In fact, they say, there has been an inflationary bias, even for the number of hours worked by an individual because the basic rate of pay is so low. But they add that the formula devised by GARACES gives a false picture of their situation.

The calculations are based on what is generally accepted as the absolute minimum number of hours' teaching required in each subject. The university authorities also complain that the formula includes too many extra periods which produce large numbers of students and not enough seminars which are more labour intensive.

The secretary of state has agreed that her sums are worked out on the basis of 45 students to a seminar in the first cycle and 35 in the second cycle, but she has said she will reduce the numbers next year if the money is available. Such a reduction is all the more urgent because in some universities like Nanterre-Paris-X the numbers are not big enough to hold such large numbers.

None the less she blames the universities for creating their own problems. She says they have overdeveloped higher studies, which require a lot of staff and have left the first cycle short of lecturers. In addition, universities have refused to trim staff where they have too many, as in sciences, and will not swap staff with other universities.

The one ray of hope for the universities is the near stagnation in the number of students. The total student population increased this academic year by only 1.5 per cent, from 811,000 to 825,000. Many of them were staying on for longer periods of study because of the diminishing job market, but much of the increase was centred in Paris while the provinces remained stable.

Faced with the hardening attitude of local politicians, it seems likely that the universities will have to carry out their threat and close some classes. During a series of recent demonstrations by students, the secretary of state declined to make any statement or take any action.

### Italy New pay deal for junior staff ends two-year dispute

One of the causes for discontent in Italian universities was taken up this week when the Education Minister, Franco Maria Molinari, and representatives of the three main trade union federations agreed on pay increases, to give greater security and better prospects for university staff.

The agreement will include a 5,700 lire raise for professors, a certain number of supplementary prolog courses, and a further 5,000 to be apportioned after competitive examinations. Under the agreement the professors will be obliged to be present in the universities at least four days a week and teach or attend to their students for a minimum of 12 hours a week.

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## Ex-London dean deals parting shot to medics

The dean of the faculty of medicine at Adelaide University, resigned a furious debate about the medical school's standards and a strongly worded criticism only a few days before he returns to Britain.

Professor Philip Rhodes, formerly dean of St Thomas' Hospital Medical School in London, resigned his Adelaide job after only two years of a five-year appointment. He will return to Britain at the end of this month.

In a confidential report to heads of medical departments which was leaked to the news media by one of them, Professor Rhodes claims that the medical school is gripped by factionism with no concept of loyalty to the university community. He says many staff produce poor research and inadequate team efforts. He lays the blame for this on an Australian society with no proper work ethic.

He says the methods of encouraging staff in their share of work were non-existent, even when it was manifest that they were not carrying out their jobs properly.

Professor Rhodes' resignation comes almost exactly five years after hundreds of Adelaide medical students signed a petition to the state government protesting at the intolerable state of medical education in South Australia.

His memorandum to his fellow academics contained the following detailed criticisms: the medical school had existed for nearly a hundred years but had contributed nothing of any great importance; any South Australian doctors who had achieved anything, such as Lord Florey and Sir Hugh Cairns, had made their contributions elsewhere, probably because Adelaide's intellectual atmosphere stifled development; there was little evidence of cooperation or teamwork in the university's committees and administration; and the school was usually subjected to unhelpful criticism; and legalistic practices dominated all the university bodies.

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students' representations were all concerned with decreasing the workload or increasing their holidays.

Adelaide medical students have not taken kindly to Professor Rhodes' remarks, though some of them agree with his criticism of the university staff and administration.

Letters in the Adelaide newspapers signed by various students complain that the dean had failed to understand the increased demand on medical students in recent years. What the students wanted, they say, was merely to prevent any additional workload.

Professor Rhodes' report also caused a stir at a higher level in the university. The university council is reported to have discussed the controversial report in camera, but so far has issued no official comment on its contents. The vice-chancellor, Professor D. R. Stranks, said the report would be the basis for further discussions in the normal course of events by individual departments and the faculty as a whole.

No successor to Professor Rhodes has been named yet.



Professor Rhodes: returning to London

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### How many students in 2000?

Universities and polytechnics are nearing the top of the demographic big-dipper. At present there are estimated to be 830,000 18-year-olds in the United Kingdom. In five years their number will reach a peak of 927,000—and then the stomach-churning descent down back to the present level by 1989 and further to not much more than 600,000 in 1995. That part is certain. The babies are already born. What happens next can only be described in the imprecise language of projections, but most people expect a modest recovery in the birth rate which will produce a total of school leavers in the year 2000 very similar to the number today.

Two interpretations of this declining and even alarming demographic pattern are possible. The first emphasises the contrast between the peak in the early 1980s and the trough in the early 1990s and can be summed up in a simple phrase: what is happening to the colleges of education today will happen to the rest of higher education tomorrow. This then gives rise to exaggerated fears that, as in the case of the colleges and polytechnics and universities may even have to be closed (or for adherents of the *Black Paper* line to eager anticipation of the time when the over-blown institutions of the Robbins era are cut down to size). Such fears are exaggerated and such anticipation likely to be disappointed because the colleges of education are a special case. The demographic decline hit them not only first—because their graduates are expected to reach school-leaving age in the early 1980s—but also because the connection between birthrate and enrolment is at the output rather than the input end.

The second interpretation places less emphasis on the peaks and troughs and more on the overall trend towards the steady state cohort of 18-year-olds at the end of the century. There are several reasons for preferring this less catastrophic but still gloomy interpretation, as a working group established by the Conference of University Administrators in its recent and detailed report published today (page 9). First, a comparatively modest increase in the proportion of the age group going on to higher education could help to compensate for the inevitable decline in the size of the total age group. Second, this demographic decline has been less precipitate than managerial and professional families which still provide a disproportionate share of the recruits in universities and polytechnics. Third, the proportion of younger and older students has been steadily rising in the past 10 years.

Yet the lucrative influence of the demographic decline of the past 10 years on the fortunes of higher education can hardly be exaggerated. This vast but unexplained and unexplained phenomenon has brought the Robbins eye to a fine focus—almost right on

### Czechoslovak discrimination

Sir,—Politically motivated discrimination in education in Czechoslovakia is not confined to entry into secondary schools and universities (THESE, March 25), but operates in several ways in the case of graduates wishing to proceed to a doctorate.

First, there is the requirement that on submission of a doctoral thesis all candidates must pass a demanding examination in political theory, irrespective of his or her academic discipline. This is a cause of considerable anxiety in many students who have little or no expertise in the field and undoubtedly deter some from undertaking a research degree at all.

Secondly, there is an unwritten requirement that the content of the thesis should reflect a certain ideology, however irrelevant this may be to the subject under investigation. When I visited Czechoslovakia last autumn to lecture to teachers of English in tertiary education, I asked a particularly gifted young graduate in English literature why she had not chosen to go on to a doctorate. She replied that she was not "clever enough"—but is not clever enough to subordinate her critical insights to the external interests of the university authorities, rather than the promotion of academic standards, by anyone who has grappled with the extraordinary bureaucracy of the Czech system will only testify.

PAUL J. CLIFFORD,  
Department of French,  
Reading University

### Western Marxism

Sir—I was stimulated by Dr Lubasz's extremely interesting and important review (THESE, February 18) of Perry Anderson's recent book on Western Marxism to write (THESE, March 4) to you agreeing from a different point of view that there was something of an intellectual contradiction between the advocacy of certain forms of Marxist philosophical analysis in the journal which Anderson edits and his dismissal of them in his book.

Unfortunately in making this point I did Dr Lubasz himself an injustice by implying that he was wrong to dismiss Anderson's book and then agree that it involved a devastating critique of the Western Marxist tradition. Dr Lubasz points out to me rightly that he makes a distinction between the book and his slightly selective but defensible advocacy of the Western Marxist tradition.

I should like to take this opportunity of correcting the impression which I gave and to express the hope that now that there seems to be a common ground between modern Western Marxism's beyond philosophical sterility we may now turn to the study of other aspects of the tradition.

Yours faithfully,  
JOHN REX,  
Faculty department,  
Katholieke Universiteit,  
Leuven.

### NUS and protest

Sir,—It was to be expected that the recent national scale of student protest action over tuition fee increases would revitalise attempts to exploit, analyse and categorise the phenomenon. Professor Dahren-dorf, at an admittedly tentative level, attempts an explanation and comparison of the student troubles of 1968 and 1977 (THESE, March 11). He is, however, ignorant of certain crucial aspects of student movement developments since the 1970s, in an understating in this area.

First, it tends to cloud the issue to think of "student troubles of 1977 and 1968" as if there were eight years of "calm" in between. Throughout the 1970s we have seen vigorous campaigns led by the National Union of Students and student union autonomy, student and teacher unemployment, all of which involved a variety of tactics, including occupation.

Second, the NUS was to a large extent bypassed by the sporadic and unrelated events at particular colleges in 1968. The actions of that past few weeks, however, have been a response to the call of the NUS executive and have all been focused on the same issue: NUS coordination and leadership of the protest action.

### Frazer's fallacy

Sir,—While I agree with the Ackerman (THESE, March 11) Sir James Frazer's work is certainly not a "total science" of the fallings of his approach to writing on me what I have said in my book *The Egyptian Myths* (Berlin, 1966). My basic aim was to analyse Egyptian myths themselves and not to do this in their relation to other mythologies. In his *Golden Bough* Frazer seemed to avoid, especially the Latin authors to that of the earlier Egyptian texts but to make facile comparisons between related cults and their simplified and once approach to religious phenomena in general.

I would venture to add that I do not find his view of the classical authors particularly relevant to the study of Egyptian mythology. I would also add that I do not find his view of the classical authors particularly relevant to the study of Egyptian mythology.

Yours faithfully,  
J. Gwyn Griffiths,  
Professor of Classics and  
Egyptology,  
University of Wales.

### Education and Industry

Sir,—I found it ironic to read in THESE, March 11, a claim that universities should be open to all students on the basis of sandwich courses. I am sure that universities should be open to all students on the basis of sandwich courses. I am sure that universities should be open to all students on the basis of sandwich courses.

### Law studies

Sir,—I find myself in complete agreement with Professor McAuliffe's excellent and entirely new approach to legal education (THESE, March 25). At a time when the legal profession as a whole is under the public microscope, it would seem appropriate to re-examine the role and structure of legal education.

While academic standards are, in general, being maintained, the law student is potentially ill-equipped to handle the considerable problems raised by the working of the law in contemporary society. Legal education must break out of its traditional "holistic" shell and come alive to the needs of society which it purports to fulfil. The law student must be encouraged to adopt a more critical and functional approach, developing an awareness of the problems and tensions. The familiar and harshest basis must be replaced by a more responsive and interdisciplinary foundation.

Also, the likelihood of such an approach being adopted is slight. Such suggestions are met with the claim, exemplified by Mr Gordon Barwick, that there is sufficient "flexibility" in the present structure. However, this is to miss the point of the suggested reforms. There is a need for fundamental changes and not just cosmetic iterations. A fresh environment required stimulation and redirection of the study of law can occur.

In advocating a more vital and vibrant theme for legal education, the call of Roscoe Pound for "the study of law in relation to and as part of the whole process of social control" remains as true, yet as unheeded as ever.

Yours sincerely,  
ALLAN HUTCHINSON,  
Legal studies department,  
Trent Polytechnic,  
Nottingham.

# The Aristotelian dimension in Marx

In the first volume of what is surely his greatest work, *Capital*, Marx pays tribute to two forefathers: Hegel and Aristotle. Marx speaks of Hegel as the great thinker who had been the first to formulate dialectic clearly and cogently, even though in the process he had managed to stand it on its head. Of Aristotle, Marx speaks as the great investigator who had been the first to analyse certain economic forms, as he had been the first to analyse so many other forms, natural, social and logical.

The tribute to Hegel is tribute to a powerful speculative thinker; the tribute to Aristotle, however, is tribute to a scientist, fished to the founder of the whole tradition of scientific investigation.

Now in paying tribute, Marx was, of course, also acknowledging debt. His debt to Hegel is widely recognised. Indeed, my view is that it is overestimated as well as misunderstood. Marx's debt to Aristotle, on the other hand, has barely been noticed. And yet what Marx learned from Aristotle's writings was to be of absolutely fundamental importance for his own work.

For, like Aristotle, Marx was all his life an investigator of forms. Putting it very roughly, one might say that Marx learned from Aristotle's biological studies how one examines living forms. And he adapted Aristotle's method of studying natural forms to the investigation of social forms, to the study of society.

It may at first seem surprising that someone trying to work scientifically on politics and society in the 1830s and 1840s should have learned so heavily on an Aristotelian method which, at least in physics and astronomy, had long since been discredited and replaced by a model of scientific method developed by Galileo and Newton. But it is not at all surprising that Marx should have turned to Aristotle, if we keep a few historical facts in mind.

In the first place, for better or worse, political science and sociology did not yet exist and so could not furnish a methodology. Secondly, the Aristotelian tradition was, in fact, far from dead, in logic as well as in biology and botany. And it was very much alive in the humanities. Indeed, there was a remarkable revival of Aristotle in the 1830s, when the first modern scholarly edition of his works began to be published, first in Germany, then in England.

By coincidence, the first volume of this edition of Aristotle's works was published in the very same year that Hegel died, and in the same place: Berlin, 1831. Aristotle had very much the reputation of being—in contrast to Plato—the great empiricist among philosophers. It was certainly to Aristotle that Hegel turned for a student of philosophy and biology, and it was very much Aristotle's method, and not Plato's, that Hegel used to claim that universities should be open to all students on the basis of sandwich courses. I am sure that universities should be open to all students on the basis of sandwich courses.

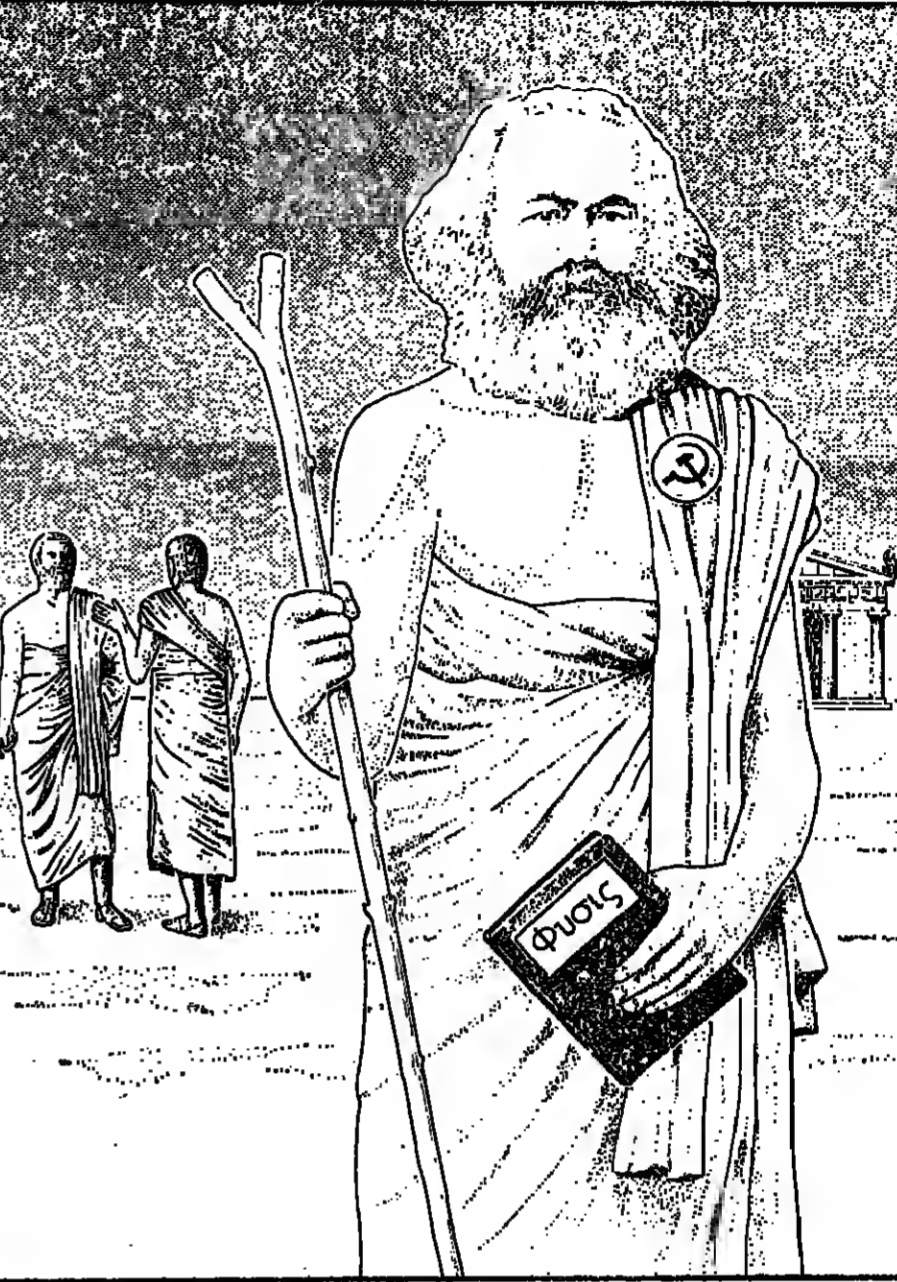
Marx concentrated especially on Aristotle's philosophy of nature and on his scientific studies. He studied not only the *Metaphysics* but also the *Physics*, *On the Heavens*, *On Generation and Decay*, *On the Generation of Animals*. These writings taken together introduced Marx, as early as 1839 and 1840, to Aristotle's method, and to Aristotle's concept of form.

Let us look a little more closely at these. Aristotle studied a great many different kinds of living beings. He examined numerous species of plants, fish and animal including the human animal. He looked upon his different parts of his animals, and upon their different parts, as so many different forms of a single living substance.

Aristotle thought of the whole of nature as a single substance which differentiates itself; nature generates its own different forms. And he believed that in order to get to know the whole of nature in general, one must study the particular forms it generates.

These particular forms had, in Aristotle's view, the immense advantage of being observable; they could be observed and even dissected. And by observing the particular forms one could build up a knowledge of the whole of nature in general.

Not only could one build up knowledge, by moving from the particular form to the general; one had to do so. If one wanted to know the general, namely nature, one had to investigate the particular, because one could not observe the whole of nature as such.



process of comparing or differentiating forms among one another depended on precise empirical observation. In short, what a given form was like and in what respects it differed from others could be determined only by investigation.

Marx learned from Aristotle both the concept of form and the method connected with it. He learned to look on different types of society as so many different forms of a single substance, mankind, or society-in-general.

Mankind was society-in-general because the life of mankind throughout history had always been a social life, a life in society. But that social substance, mankind—so Marx believed—has generated different forms of society.

Mankind in his history has generated a patriarchal form of society, a feudal, a bourgeois and other forms of society. These different forms of society, Marx came to believe, could be examined by means of a method similar to the one Aristotle had used. They could be studied by differentiating the various forms. And one could then proceed to examine the parts or organs of each of the several kinds of society.

By studying the parts or organs of a given form of society one could then discover what made it tick. One could find out what its life was like. And what Marx believed himself to have discovered in this way was that the anatomy of society is to be found in its political economy.

In a due course, Marx modified both Aristotle's method, and his concept of form, in very original ways; but the debt to Aristotle remained a decisive one, so decisive, I think, that one cannot really understand Marx's work without recognising the Aristotelian dimension in it.

empirical evidence; at the same time he reviews earlier and current theories on the subject-matter; and then he brings the one to bear on the other.

Now, such a similarity in their ways of working might be just a matter of coincidence, so I did not think too much about it. But then I looked more carefully at the way Marx organizes his empirical materials. And this proved extremely interesting.

In his early investigation of political life, Marx begins with the general form—the state. He breaks it down into its various specific forms—monarchy, aristocracy and democracy. And then he examines the concrete, empirically observable particulars of the form he has decided to analyse, its parts or organs.

So, for example, he examines the place of the House of Lords in the British monarchical system. He traces its origins and its course of development, examines how the House of Lords has come to have the form it has in modern times, studies the basis on which men become members of the House of Lords and so on.

He then compares the House of Lords with the French Upper House and with the United States Senate and with the Parliament of Poland and the Upper Chamber in Sweden along similar lines; historically, geographically, in the context of the several constitutions of the several states involved. And from this massive collection of particulars, he then builds a concrete conception of what the state is and what makes it live.

But this, it finally struck me once I had managed to reconstruct the process, is Aristotelian method. It is a study of the generation, structure, modification and—potentially—of the demise of forms. Like Aristotle, Marx starts with the general form or organ of forms. Like Aristotle, he builds up a concrete picture of the more general form through an examination of the particular forms, and their parts or organs.

Above all, and again like Aristotle, Marx proceeds empirically. This is important, because Marx is so often accused of having proceeded not empirically, beginning with certain concepts and premises and simply, arbitrarily, superimposing them on the real world. That is what he did not do. Indeed, it was precisely for being deductive and arbitrary that he criticized Hegel. One might say that he criticized Hegel from the standpoint of Aristotle.

Marx says, in his *Critique of Hegel's Philosophy of Right* in 1843, that Hegel has devised a remarkable dialectical system. He has applied it to the state to show that the state is an organic whole. But Hegel's dialectical account is completely abstract. It does not explain the specific features that make the state into what it is—namely the form of political life.

What Hegel says about the state could equally well be said about the solar system or about an animal organism. An abstract dialectic, says Marx, explains everything. And so "the explanation of nothing".

Now, I am not saying that Marxian theory is simply Aristotelian philosophy of nature applied in society. That would be as foolish as to say that Marxian theory is simply Hegel's dialectical philosophy turned right side up. Marxian theory is exceptionally complex and multidimensional, and no simple view of it will do it justice. All I am saying is that if we want to understand Marxian theory, we cannot afford to neglect its Aristotelian dimension.

Finally I should like to make two comments which sit above remarks in the context of recent and current treatments of Marx. The first comment is that Aristotle and not Plato was the great philosopher of antiquity by whom Marx was so profoundly influenced. Professor Popper's well-known conjecture that a direct line of intellectual descent runs from Plato to Hegel to Marx is wrong, and profoundly misleading. It is the second comment that Marx was very much an empiricist as well as a dialectician. Professor Popper is, in my view, quite wrong to polemicalize against dialectic as being no logic of scientific discovery, since in doing so he gives the impression (indeed, he seems to believe) that Hegel and Marx supposed it to be one. In fact, neither of them made this mistake.

At the same time, the Althusser-inspired anti-empirical trend in much of contemporary Marxist theorizing is certainly out of tune with Marx himself. Positivist empiricism is not the only kind of empiricism. There is therefore no need to ascribe to Marx a (wholly imaginary) special and original method of "constituting an object of inquiry" in order to save him from the charge of having been a (positivist) empiricist. In fact—of which I am firmly believe—Marxist theorizing which has no solid empirical foundation is not "more scientific" than "bourgeois empiricism"; it is simply vacuous.

But, of course, in reading these note-books one gets a chance to try to reconstruct Marx's method of investigation. It had already struck me some time ago that Marx always seems to study a subject by doing just what Aristotle did: he studies the

### Heinz Lubasz

The author is senior lecturer in history at the University of Essex. This article is a revised version of a talk given earlier this year on BBC Radio 3.

الرجاء ان يكون



Days that changed the world



The people's militia parade on Chinese National Day.

Comenius. But unlike Comenius... There are two key discontinuities between the world of Lenin and Mao...

unchallengeable importance. He sees... and he seeks to understand it in what is, at least in intention, a genuinely historical manner...

empire of the Romans into a conquest state whose military dynamism is still plainly in the ascendant...

understand and explain the world in the ways in which revolutionaries have done. A premature attack on the book's failure only in an error in its method of approach...

But this is to see the cause of the book's failure only in an error in its method of approach to the problem, a misconception as to how it is possible validly to study how ideas, ideals and ideologies are historically related...

What Laskey offers is a study in intellectual epidemiology which might either lead to the genetics of the infective organism or into the mechanism through which the infection in its evolved form is transmitted...

By telling his story as one of the solemn (or hilarious) unfoldings of an extremely bad idea and by selecting to tell it in such an intellectually unconvincing fashion Laskey has not so much failed as simply chosen not even to risk battle.

What he has undeniably succeeded in doing, however, is to draw attention to a very large vacancy in the reasonably modern political self-understanding of the modern world.

John Dain

A brutal and fragmented society

French Society and the Revolution edited by Douglas Johnson Cambridge University Press, £5.00 ISBN 0 521 21275 5

Only a few of the 10 prize-winning essays can be singled out here. William Doyle usefully challenges the notion, still cherished by many historians, of a growing aristocratic reaction in the second half of the eighteenth century...

The remaining essays are mainly concerned with the impact of the Revolution on rural communities. One such community, that of the traditionally backward province of Brittany, is studied in a sensitive and well-researched piece by T. J. A. Le Goff and D. M. G. Sullivan...

Gwynn Lewis shows how the passions engendered by the Revolution still found expression in the setting of old scores which took place on the return of the Bourbons.

Whether, as it is claimed, these revolutions reflect the largely dominant French view that the French Revolution is the outstanding bourgeois revolution is perhaps open to question for they reveal above all a brutal and fragmented society "inured" in the words of Gwynn Lewis, "to the sight and smell of blood" by the Revolution.

Paris was obliged to change its atmosphere and thereby provoked a violent reaction. Finally, in an essay on the White Terror of 1815, J. M. J. Rogister

Utopia and Revolution by Melvin J. Laskey Macmillan £15.00 ISBN 0 333 21333 5

"In this world revolution is still the main stream," said Chairman Mao in one of his last pronouncements. There is no reason to presume that the young statesman meant anything very precise by this claim...

These essays of his breadth and scope are a welcome contribution to the study of the history of the world today. In some ways this approach is more convincing than the usual one to explore the world's etymological roots in the literature of medieval astronomy and astrology...

Laskey's approach is more convincing than the usual one to explore the world's etymological roots in the literature of medieval astronomy and astrology in which it was in principle possible to succeed and in which no one plainly has as yet succeeded...

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Chair

Dr M. G. Audley-Charles, reader in geology at Imperial College, has been appointed to the chair of geology at Queen Mary College from October 1.

Dr S. Jenkins has been awarded the title of professor of clinical engineering in respect of his post at St George's Hospital Medical School.

Dr M. Redwood has been awarded the title of professor of electrical engineering in respect of his post at Queen Mary College.

Professor Norman A. Greenacre, Steadman professor of history, Virginia University, has been appointed to the Harold Vysses Harnsworth chair of American history, 1978-79, at Oxford University.

Dr Kenneth V. Peasnell, lecturer in the department of accounting and finance, Lancaster University, has been appointed to the Wolfson Chair of accounting and finance at the University of London.

Dr Hugh Tucker, former director of the Institute of Race Relations, has been appointed to a chair in the department of politics at the University of Leicester from September.

Dr R. G. Rhodes, director of the Wolfson Project on magnetic levitation of high speed trains, at the University of Warwick, has been awarded a personal chair in the department of engineering.

Central Policy Review Staff, has been appointed to an honorary chair in the department of politics of the University of Warwick.

Appointments

Research Council, has been appointed a member of the University Grants Committee for five years.

Dr P. A. Sahnie, at present assistant director, South-Eastern and Wales of the Institute of Geological Sciences, Natural Environment Research Council, will move to the residential division in Sussex on June 30.

Mr Duncan Rutter, currently deputy secretary of the National Civil Board, has been appointed director of the hotel and catering industry training board. He takes up the appointment of director designate on May 16 and will succeed Dr T. C. Shipp on July 1.

Mr Samuel Dulais Cook, president of Dillan University, Louisiana, has been elected to the board of directors of the Council on Library Resources Inc.

Agricultural Research Council Professor J. Heslop Harrison has been appointed to the Agricultural Research Council in place of Professor J. W. Bennett who has retired. The appointment is for a period of five years. The membership of the ARC is as follows:

Chairman: John J. Ager, Member: Sir M. A. Jagger, Rosburghshire farmer; Mr C. L. Brown, Chief Veterinary Officer Ministry of Agriculture, Fisheries and Food; Mr J. D. H. Jones, Director of Agricultural Development and Advisory Services, Hugh Ford, professor of mechanical engineering and head of department at Dillan University, Louisiana; Mr E. M. W. Griffith, Denbighshire farmer; Professor J. L. Hartley, professor of forest ecology, University of Oxford; Professor Henry Harris, professor of pathology, Oxford University; Professor R. D. Hughes, professor of veterinary pathology, Oxford University; Mr J. D. Hutchinson, director of Rank Hovis McDougall Research and Development, London; Dr J. S. Kutz, head of department of physics, London University; Mr J. S. Mackay, chief agricultural officer, Department of Agriculture and Fisheries for Scotland; Professor J. Manly, deputy secretary, Ministry of Agriculture, Fisheries and Food; Professor C. H. Peckover, professor of clinical pathology, University of Liverpool; Dr H. C. Pereira, chief officer of the Ministry of Agriculture, Fisheries and the Home; Mr G. Scholten, member of the Home Office; Viscount Trevelyan, director of Unilever.

Members of the newly set up steering group on Library Research are as follows: Lady Margaret Hall, Oxford (chairman); Professor A. J. Brown, principal, Heriot-Watt University; Mr N. East, Heriot-Watt University; Mr N. Briston, Bristol; Mr B. J. Terry, independent specialist; Mr P. T. Stone, assistant professor, University of Sussex; and Professor S. C. Vickery, University College London.

Dr A. G. Peck, principal of the president of the Association of Principals of Colleges, Dr W. Bowler of the Slough College of Higher Education, succeeds Dr Peck as vice-president. The new honorary secretary is Mr J. K. Street, of the First Hertis College of Further Education. Mr J. M. Ferguson, former chairman of the engineering board of the Science

Grants

Organic chemistry—£120,000 from the SRC for an investigation into the synthesis of Avipachin under the direction of Dr R. E. Harker.

Metallurgy and materials—£120,000 from the SRC for an investigation into the synthesis of Avipachin under the direction of Dr R. E. Harker.

Orthopaedic surgery—£200,000 from the SRC for an investigation into the synthesis of Avipachin under the direction of Dr R. E. Harker.

Medicine—£20,000 from the SRC for an investigation into the synthesis of Avipachin under the direction of Dr R. E. Harker.

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Pathology—£5,000 from the SRC for an investigation into the synthesis of Avipachin under the direction of Dr R. E. Harker.

Civil engineering—£11,000 from the SRC for an investigation into the synthesis of Avipachin under the direction of Dr R. E. Harker.

National Physical Laboratory—£10,000 from the SRC for an investigation into the synthesis of Avipachin under the direction of Dr R. E. Harker.

Metallurgy—£5,807 from the SRC for an investigation into the synthesis of Avipachin under the direction of Dr R. E. Harker.

Mechanical Engineering—£34,000 from the SRC for an investigation into the synthesis of Avipachin under the direction of Dr R. E. Harker.

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# BOOKS

## Jonson the serious artist and teacher

Ben Jonson: Public Poet and Private Man  
by George Parfitt  
Dent, £5.95  
ISBN 0 460 10429 2

"No one doubts that Ben Jonson was one of the great characters of English literature." This is Mr Parfitt's point of departure for his study of Jonson, and it is hardly to be disputed. A strong personality manifests itself throughout Jonson's writing, and the evidence suggests that he made a vivid impression on everyone who came into contact with him. Unhappily it is also clear that many of those who met him did not like him; more importantly, many readers today are repelled by the man they seem to meet in his works. Of course the real-life Jonson may not have been at all like the idealistic figure of him in the study, and he is not always consistent in the way he presents himself as a writer. Mr Parfitt recognizes this clearly and refers frequently to the "tension" between the different sides of Jon-

son. He also rightly warns us against a selective reading of the evidence and the attempt to force Jonson into too rigid a mould. Unfortunately he does not always heed his own warnings. He himself readily responds most warmly to the moral, didactic Jonson, the serious artist and teacher. Again, no one will dispute that this is an important aspect of Jonson, and one which in the past—though not in recent years—has tended to be under-emphasized. As a view of Jonson it need not be affected by the indications that he was not always the sober, righteous, reasonable, and virtuous figure he constantly held up for emulation. Parfitt, in fact, sees Jonson's life as "an unrelenting effort to make himself and his art into something defined by his deepest beliefs and ideals", an effort constantly thwarted by the recalcitrance of his own nature and the imperfections of the society in which he lived. This may well be true, but if so it is a pity that Jonson was not more explicit about the struggle; instead, he seems frequently to offer only a

calm assumption of moral superiority and a serene belief that virtue is bound to triumph. Parfitt, it seems to me, has to do a certain amount of "reading into" some of the texts he deploys, and they will not always bear the strain. I think, for example, that he quite misreads Drummond's well-known comment upon Jonson that he was "Vindictive, but if he be well answered, at himself". More importantly, Parfitt's approach limits his response to the plays. He is very good on the poetry, as might be expected, good on the masques and on Jonson as a translator and imitator of the classics. He has much of interest to say, too, about the earlier and less well known plays, but he has less to offer about the major masterpieces. This may be because he is reluctant to enter areas in which so many other critics have devoted themselves. It is certainly not because he is not interested in Jonson as a practical playwright; indeed he emphasizes the need to see Jonson on the stage, although he is

critical of some recent productions. The problem really is, though, that *Epicoene* and *The Alchemist* are not really very rewarding if approached too strictly from a moralistic standpoint. This is even true of *Burtholme Fair*, and even Parfitt found himself writing that when Jonson wrote this play his mood may have been "close to despair" and that "if [his interpretation] makes *Burtholme Fair* seem like Jonson's version of *King Lear*" he is quite happy, he should have started to wonder whether his approach was not leading him astray. It would be quite unfair to suggest that this is all Parfitt has to say about *Burtholme Fair*, and indeed he recognizes the vitality and vigour of this and other comedies, but it is still true that while the Jonson he gives us is an admirable and worthy figure, he does not sound like much fun. Ben Jonson: Public Poet and Private Man is really rather a solemn affair, in fact, and cheerfulness does not often surface. It will probably be best read as a correc-

tive to other views of Jonson, as it were, it might seem, but it is a pity that it does not come to the subject more directly. His style is often very good, but it is not always so. I don't much like his occasional lapses into "Middlemarch Murry's class" and "Nemah" and one seems to be reading a page from a tape-recording of a very much indistinct speaker. On the other hand the reader is assured a fair knowledge of Jonson's scholarship, or at least of what is provided by Clifford Simpson (to whom Parfitt refers very much indeed). So, I do not think that it is (in any way) a serious contribution to the subject, and one which will, very naturally, not be read by those to whom it is for their studies. J. B. Bank



George Plinkett's caricature of George Moore and Susan Mitchell as Cupid and Psyche is reproduced in a new edition of Moore's *Hall and Fairwell* edited by Richard Cave. Sinythe Ltd, £20.00.

## Cult of the primitive

Liam O'Flaherty the Storyteller  
by A. A. Kolly  
Macmillan, £7.95  
ISBN 0 333 19768 2

William Golding: The Dark Fields of Illsevery  
by Virginia Tiger  
Marion Boyars, £2.50  
ISBN 0 7145 2595 2

Lord of the Flies, *St. Almo's*, *The Memories of a Survivor*, *Crum*: these few titles taken at random suggest the diversity of "primitivist" themes in modern literature and the failure of critics, by and large, to investigate so pervasive an ideological trend. A history of literary primitivism might trace back today's almost ubiquitous assumptions to the debates of the late nineteenth century, when doctrines of man's underlying savagery and the "veneer" of civilization were far more closely tied to biology and ethnology than they are today.

The Darwinian notions of struggle are the explicit subject of Jack London's books, of Wells's *Island of Dr Moreau* and of social reporting such as James Greenwood's spectacular "Man and Dog Fight in Hanley" (reprinted in Peter Keating's recent anthology, *Into Unknown England*). The ethnologist's fascination with men's savage state can be seen in Zola and his followers for whom realism became a dispassionate study of human degradation. The reception of all these writers was violently controversial; though no less shocking in its effect, exists in a climate where

art is expected to shock and so causes little notice. In fact, in protest against the mystique of the primitive in modern literature might seem to require a degree of righteous self-deception which we no longer possess. Violence is too palpable a political fact for its fictional embodiment to cause much excitement. Perhaps this is why the suggestion that the primordial element is dominant at all times and places, offering a universal key to man's inner nature, now meets with so little opposition. Golding and O'Flaherty are among the many writers who have seemed to endorse a primitivist cult, though their reasons for doing so have little in common. The vast majority of O'Flaherty's stories are set in the West of Ireland, and all are embellished by his upbringing in the Aran Islands where social structures were customary and man and nature seemed consequently almost identical. O'Flaherty's Irishness and violence offer themselves as an authentic record of that life in language which arises directly out of the culture itself. His highly idealized vision is best realized in anecdotes which, as literary forms, are almost as minimal as the lapidary verses, which Wordsworth praised so eloquently in his "Essay on Epitaphs". When O'Flaherty moves to more urban and historical subjects, the violence seems to express a personal tension and a false note is frequently struck. The resulting unevenness, for all its interest, is an imprudently naive plea for a critical monograph which concentrates mainly on inter-

nal analysis of these and A. A. Kolly offers thoughtful, sensitive evaluations of the but the narrowness of her focus rather heavily-handed apparatus make this a difficult read through. Golding, as a writer, is a writer who, in primitivist themes to modern world. His novels, drawn to the state of nature, suggest that it is all we have to show the poverty of our world of magic, religious, artistic creation. His themes of hunter and hunted, and his own suffering, and his own fear reflect man's fall and his need for something powerful than reasoned thought to combat his inhuman evil. Golding is evidently little of a primitivist, but his modern sciences such as biology and anthropology, and understanding of this evil, however, he has not managed to break out of the fabric of the total confrontation with the contradictions of modern culture. The *Inheritors* was a primitivist tale and an unambiguous success, while *The Spire*, by much more ambitious, was a partial failure. Virginia Tiger's provocative, informative critical handbook, first published two years ago, is now revised in paperback. It is now revised in paperback. It is now revised in paperback. It is now revised in paperback.

Some grasp of phylogenetic relationships is important to the understanding of any group of animals. Nematode phylogeny and taxonomy are difficult and confusing and, like so many aspects of the group, suffer from the division of workers into the fields of free-living and plant and animal parasitic forms. *Evolution as a Basis for the Systematization of Nematodes* by Professor Andrassy is an attempt at a comprehensive classification based upon phylogeny. Although it is a book for the specialist, the general reader will find the sections on history and on perspectives of classification and on evolutionary trends of some interest. Whether the revision of the class Nematoda into three subclasses and the new system of classification proposed by Andrassy will find acceptance only time will tell. Such proposals often generate protracted and sometimes bitter controversy. C. J. Mapes

# BOOKS

## Nematodes

*Physiology of Nematodes*  
by D. L. Lee and H. J. Atkinson  
Macmillan, £5.95  
ISBN 0 333 18600 1

*Evolution as a Basis for the Systematization of Nematodes*, 2nd edition  
by L. Andrassy  
Phanem, £7.90  
ISBN 0 273 00968 0

Many biologists may be surprised to learn that nematodes are probably the most numerous of the metazoa. In number of species they lie third after the insects and molluscs and are found in a great range of widely different habitats. For many years they have largely remained the preserve of workers on plant and animal parasites, although in fact the majority are free-living organisms, and have been ill-served by often perfunctory accounts in texts on invertebrate zoology.

Interest in nematodes is now growing very rapidly, not only because of their obvious practical importance in medicine and agriculture, but also because they provide unique opportunities for the study of a number of biological problems. The publication of the second edition of *Physiology of Nematodes* is thus most timely for it provides an excellent introduction for both undergraduate zoologists and researchers from other disciplines working on the group for the first time. Compared with most animal groups, the nematodes show relatively little morphological diversity and a knowledge of possible physiological differences is control to any understanding of their adaptations to different modes of living.

This edition has been written by Professor Lee together with Dr A. J. Atkinson and has greatly benefited from this collaboration between experts in animal parasitic and free-living and plant parasitic forms, for it now provides a comprehensive coverage of the group.

The original text has been extensively rewritten and expanded and is excellently complemented by clear diagrams and tables. The authors have succeeded in the difficult task of including a great deal of interesting and important material in a concise and very readable book. Some grasp of phylogenetic relationships is important to the understanding of any group of animals. Nematode phylogeny and taxonomy are difficult and confusing and, like so many aspects of the group, suffer from the division of workers into the fields of free-living and plant and animal parasitic forms. *Evolution as a Basis for the Systematization of Nematodes* by Professor Andrassy is an attempt at a comprehensive classification based upon phylogeny.

Although it is a book for the specialist, the general reader will find the sections on history and on perspectives of classification and on evolutionary trends of some interest. Whether the revision of the class Nematoda into three subclasses and the new system of classification proposed by Andrassy will find acceptance only time will tell. Such proposals often generate protracted and sometimes bitter controversy. C. J. Mapes

## Reproduction

*The Evolution of Reproduction*  
edited by C. H. Austin and R. V. Short  
Cambridge University Press, £6.50  
and £2.50

ISBN 0 521 21286 3 and 29085 6

When the first volumes of this series, *Reproduction in Mammals*, appeared a few years ago, they were a timely attempt to provide a concise and up-to-date account of reproductive biology. The rapid development of new techniques had generated a vast amount of information not easily assimilated by undergraduates or scientists outside the field. Their presentation was attractive, their style informal and calculated as much to arouse interest as to impart facts. To those familiar with the first five volumes of the series, the sixth will need no further recommendation.

In the first chapter of *The Evolution of Reproduction*, the significance of the relatively straightforward mammalian mechanism of reproduction is compared with more esoteric procedures such as hermaphroditism and parthenogenesis. This leads to a discussion of the primary genetic control of mammalian sex determination. The field is a fascinating one, but some of the issues are skated over somewhat too lightly. For example, the problem "Why a one-to-one sex ratio?" is posed, but the answer peters out in rhetorical questions. "Would salmon swim hundreds of miles up river to the place of their birth if there were no sex at the end of the journey?" Possibly not; but if sex were the only reason for swimming up rivers, male and female salmon could quite easily dispense with the journey and mate in the sea. Fundamental questions deserve serious discussion, even if they cannot yet be answered.

Sex is put in its social context with a discussion of possible breeding systems—monogamy, polygamy, promiscuity—and their implications for reproductive success. The subtle interplay of social and reproductive functions, and the fine balance of costs against benefits, are well illustrated by the analysis of examples; none more poignant than that of the extravagant tail feathers of the male straggler, but prove highly inconvenient in high winds, reducing flying time and, consequently, food intake.

Species, by definition, are populations of organisms in reproductive isolation from each other. Fertilization by the sperm of another may fail; or a hybrid conception aborts during pregnancy; or the offspring is born but proves sterile; or interbreeding may be prevented only by the failure of two species to meet. After discussing the relations between mammalian reproduction and speciation, Roger Short touches—all too briefly—on the past and future evolution of human reproduction. Other chapters deal with the evolution of mammalian viviparity, and with the adaptation of eggs and sperm to their own environment. *The Evolution of Reproduction* should have a wide appeal to those interested in evolution and biology in general, as much as to those with a specific interest in reproduction. P. J. Hogarth

## Balance of nature

*Insects and the Life of Man: Collected Essays on Pure Science and Applied Biology*  
by V. R. Wigglesworth  
Chapman & Hall, £1.25  
ISBN 0 412 14730 9

In the last 50 years Sir Vincent Wigglesworth, a leading figure in insect physiology, has had unique opportunities to see the practical application of medical and agricultural entomology through the eyes of a physiologist. When invited to address learned or lay audiences, he has chosen to speak on topics of wide general interest and this book brings together 16 of these lectures in the form of essays. The first six essays are mainly concerned with problems of insect pestis or agriculture. In "Insects and human affairs" (1961) he warns against over-enthusiasm for insecticides and weedkillers: partly because many of our crops naturally require pollination by insects, "DDT and the balance of nature" was written after a tour through North America in 1945 and describes the successful campaigns against human lice and mosquitoes, but already he regarded the agricul-

tural uses of DDT as a twofold moral. A brief postscript tells the reader that this use of DDT is now widely banned. Two chapters consider the effects of post-war government policy, which separated the agricultural advisory services from university research. In "The fauna of the orchard" (1959) his picture of the ecological situation is far from clear by modern standards. The critical part played by density-dependent factors is obscured by misquoting their definition, by unfortunate examples and by sloppy use of the word "control". "Malaria in Ceylon" (1935) is a masterly account of the complexities of the interactions between man, mosquitoes, rainfall and epidemic disease, but readers would have been helped if the spectacular success to the later eradication of the disease and its recent reappearance had been referred to in a short addendum. "Malaria in war" uses information only up to 1940 and the problems in the First World War form the main subjects for discussion. The next chapters deal with insect physiology and the philosophical basis for scientific discovery soon

on historical context. Here the author's views are particularly stimulating. "The epithelial cell" was a lecture given to the Royal Society in 1960. It tells the story of some of Wigglesworth's own research on the blood-sucking bug *Rhombinus* (whose portrait adorns the book's cover). Line drawings help to explain the complex changes seen in the cells as they perform their diverse tasks in the body of the insect. It gives a fascinating insight into the way in which scientific research develops by the interplay of observation, imagination and experiment. A discourse on Wordsworth's view of science and on "The reign of science" complete the book. Wigglesworth's easy style makes the book attractive and many of the ideas are as fresh as when they first appeared; but the historical accounts of the medical and agricultural problems are now dated. More extensive addenda in some of the chapters would have increased the value of the book in the specialist and to the general reader. G. C. Varley

## A taxonomic survey

*Protozoa*  
by Albert Westphal  
Blackie, £9.90  
ISBN 0 216 90216 9

This introduction to the protozoa is presented in three main sections. The largest section, occupying about 60 per cent of the book, is a highly illustrated, taxonomic survey of the principal groups of the flagellates, rhizopods, sporezoa (including Ciliostomatida) and ciliates. About one-third of the book is concerned with the structure and function of the cell organelles of the protozoa. This is an area in which there has been an explosive growth in knowledge in recent years, since the protozoa provide excellent material for studies of ultrastructure and cell physiology. Such subjects as nuclear function, mitochondria, food uptake and digestion are given a broad coverage and in many areas the reader can gain a general impression of recent views on these subjects. However, the approach is too superficial for students with even a moderate understanding of cell biology. For example, the treatment of mechanisms of motility and osmo-regulation gives little idea of the current views on such subjects as ciliate myotomes, the structure, movement and coordination of cilia and flagella and mechanisms of ionic regulation that play a vital role both in the control of osmotic levels and in the sensory and motile behaviour of the organisms; in all of these areas the information in the book lags behind that provided in other textbooks, let alone monographs, that are quoted in the bibliography.

The final section is concerned with protozoa and their environment. This includes a very brief review of the habitats of free-living protozoa and a more detailed survey of the habitats, life cycles and pathogenic features of a selection of the more important parasitic protozoa. This English version of the original German book has an unexpected number of spelling errors; for example, the use of *Cylostome* for *Cyrtostome* could mystify many a student. There are also scientific errors including the suggestion that the cystostome opens in the flagellar pocket of *Amoeba*. There is no proper bibliography through which one could follow up the information given and the short list of textbooks, monographs and journals is of very little help. Michael Sleigh

## Putting war into words

*The First World War in Fiction*  
edited by Holger Klein  
Macmillan, £8.95  
ISBN 0 333 18823 3

*Poetry of the First World War*  
by J. M. Gregson  
Edward Arnold, £3.30 and £1.60  
ISBN 0 7131 9930 8 and 8931 6

The great literature of war—Homer and Tolstoy, Fabrizio at Waterloo, the last poem of Georg Trakl, the unforgettable pages in Proust's *Le Temps retrouvé*—offers us moments which are instinct with humanist affirmations. The literature of the First World War offers us moments which are beyond humanist need almost beyond literature. Here there are two wars: the war of the poets and the war of the judges (1921). The war of the poets is the one which is made and the one which is spoken of, and the two have almost nothing in common. Perhaps only studies like Paul Fussler's, which are concerned with more than the literature or compilations like Guy Chapman's *Poets of the War*, which soldier and writer should, can hope to do justice to the sheer diversity of the experience and bring the two wars together in one image. Of the 18 essays in Holger Klein's compilation, all but one (J. P. Stern's selection of sections from his brilliant 1952 study of Ernst Jünger) are new, and those by Walter Reuter (on Giono), John Flower (on Dostoevsky) and Jonathan Dale (on Drieu la Rochelle) are excellent. Robert Pynsent's study, which is somewhat scholastically contrasted with Hasek and Karl Kraus, whose gargantuan *Les Daves de Moravia* has actually been partially translated

(New York, 1974), despite what Pynsent says to the contrary, Marjorie's excellent prose is sensibly discussed by Christopher Wagstaff. Claims are made for the evaluation of the reputations of R. H. Mottram, Henri Barbusse and Erich Maria Remarque, and the editor Willmetton, which at least has the merit of reminding us of the fine line-outs of William Somerset Maugham's *The Patriots*. It is not clear why, if Remarque is to be the once famous book of Ludwig Renn (*Krieg*) and Jules Romains (*Verdun*) should not also be accorded the benefit of reevaluation. The question of which is the best English novel of the war remains unsettled and C. N. Smith's (*Freddie Manning*) and John Morris (*Attentio*) books to be sought

limitations to suggest why these writers' reputations routinely fluctuate. The case for Ford, surely the strongest candidate, has been argued more sensitively than usual by Michael Bradbury has time to spare for. The other essays discuss A. Farewell's *To Arms*, the *Enormous Room* and *The Case of Sergeant Gricha*, arguably among the best war books, and Dos Passos, but the late Stanley Cooperman's *The World War I and the American Novel*. Despite the energy and expertise of the contributors, one feels the lack of the authorial focus that made Fussler's book so memorable. It is convenient to have 18 different approaches collected together, but had more effect. More reference might have been made to the literature of the Second World War, in

a volume already very generous. It seems to me that it is a pity that it does not come to the subject more directly. His style is often very good, but it is not always so. I don't much like his occasional lapses into "Middlemarch Murry's class" and "Nemah" and one seems to be reading a page from a tape-recording of a very much indistinct speaker. On the other hand the reader is assured a fair knowledge of Jonson's scholarship, or at least of what is provided by Clifford Simpson (to whom Parfitt refers very much indeed). So, I do not think that it is (in any way) a serious contribution to the subject, and one which will, very naturally, not be read by those to whom it is for their studies. J. B. Bank

Among this week's reviewers:  
J. B. Domborough is principal of Lucre College, Oxford and author of books on Ben Jonson;  
Dr Gordon Daoles is lecturer in modern far eastern history at the Centre for Japanese Studies, Sheffield University;  
John Dunn is a fellow of King's College, Cambridge and author of *Modern Revolutions* (with Dr A. P. Robertson), and *Dependence and Opportunity: Political Change in Asia*;  
Dr Peter Lloyd is reader in social anthropology at Sussex University. His books include *Classees, Creeds and*



## Reviewers

Coups and Power and Independence;  
A. C. Milner is lecturer in south east Asian history at Kent University;  
Dr P. J. Hogarth is lecturer in biology at York University. His book *Viviparity* is to be published shortly;  
Keith Thurley is senior lecturer in industrial sociology at the London School of Economics;  
John Toboorn is lecturer in economics at the University of East Anglia;  
G. C. Varley is Hope Professor of Entomology at Oxford.

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## BOOKS

### Two city states

The Development Progress of Hong Kong and Singapore by Theodore Berger and Frances M. Gleason. Harmondsworth, £10.00 ISBN 0 333 18585 4

The importance of the city-state has been much dismissed as a crucial factor in the development of the classical Greek world and of Renaissance Italy; it is rare to find an argument for such a state in the modern debate on development strategies. In the world of the development theorist, urbanization tends to mean the growth of the urban poor and cities have in the past been dependent on their rural hinterland. Social and economic progress is argued to depend on land reform, the mobilization of peasant labour and the concentration of capital investment in new industrial projects. Such progress has to be stimulated and protected by states based on national identities not infused with a modernizing and reformist or revolutionary spirit.

Hong Kong and Singapore have not been seriously considered as relevant in theories of development, partly because of their odd political status, partly because they are not seen as demonstrating any of the social, economic and political processes which are judged to be central to any development strategy. The Geiger's study of the two 'city-states' and their contention that they provide models for development is therefore an intriguing idea worth pursuing in length and deserving detailed examination. The fact that both situations are examples of Chinese approaches to industrial development clearly adds to their significance as well as the rather obvious contrast between the laissez-

faire philosophy of the Hong Kong government and the emphasis on economic planning of the People's Action Party (PAP) leaders in Singapore. The book takes the form of a report intended for policy makers and opinion leaders in the developing countries and in the United States and other developed nations, as well as for development experts. It was originally published in 1973 but is republished here with a new preface taking the two situations up in the summer of 1975. The treatment is straightforward and descriptive, with the two cases discussed separately and an attempt is made in sketch in the basic elements of Chinese culture and to draw lessons applicable in other developing countries. The main analysis is then applied in explaining the reasons for the high rate of growth with some account of the development of the social policies of the two governments.

Although there are serious gaps in the economic data available, particularly in the field of consumption and real wages, the information presented supports the view that the development of an industrial manufacturing base in Hong Kong and Singapore has allowed a fairly dramatic improvement of living standards to take place for much of the population. Certainly, the growth of exports and the development of both cities as international commercial, financial and administrative centres has been extremely impressive. The book is useful enough as a short reference or guide to published data on both cities. Unfortunately, the authors try to go beyond this, but only succeed in presenting an exceedingly superficial account of government and business policies and their effects. In Hong Kong, for example, the obvious contrast between the laissez-

faire philosophy of the Hong Kong government and the emphasis on economic planning of the People's Action Party (PAP) leaders in Singapore. The book takes the form of a report intended for policy makers and opinion leaders in the developing countries and in the United States and other developed nations, as well as for development experts. It was originally published in 1973 but is republished here with a new preface taking the two situations up in the summer of 1975. The treatment is straightforward and descriptive, with the two cases discussed separately and an attempt is made in sketch in the basic elements of Chinese culture and to draw lessons applicable in other developing countries. The main analysis is then applied in explaining the reasons for the high rate of growth with some account of the development of the social policies of the two governments.

### The Japanese achievement

The Japan Reader, volume 1, Imperial Japan, 1800-1945; volume 2, Postwar Japan, 1945 to the Present. Edited by Jon Livingston, Joe Murrie and Felicia Oldfather. Penguin, £1.75 each ISBN 0 14 02 1967 6 and 1968 4

Japan is the most abrasive and least understood of the economic powers of the post-war world. Economists praise her industry, ecologists lament her stained and poisoned landscape, but overall she is the subject of flimsy and random reporting. Against this unhappy background these volumes are very welcome additions to low priced literature in a neglected field.

The editors are all members of the American Committee of Concerned Asian Scholars and have marshalled documents, literature, newspaper and academic writing to describe both the crisis and the gains of Japan's achievement. These anthologies aim to emphasize social and economic themes in Japanese development, and, on balance, they achieve considerable success.

In Imperial Japan, 1800-1945 the editors start from current historical fashion and present the sufferings rather than the economic efficiency of the nineteenth-century peasant. They largely ignore several major themes of recent western scholarship: the rapid growth of education, which preceded modernization, and the role of the Meiji constitution in their treatment of Meiji politics the editors neglect earlier assessments and prefer accounts which dramatize the conflict between oligarchs and 'democratic' leaders.

Despite these unconventional choices this patchwork volume has many virtues. Its main strength lies in the rediscovery of old works and themes which have been half forgotten in the years when modernization has provided the language and morality of academic debate. E. H. Norman's account of conscription and its opponents describes inequalities and paradoxes which

are often ignored by writers of macro-history. Haroness Ishimoto's forty-year-old account of sufferings in the Mike coalmine for Minors' Humble brings to life the realities of the industrial advance. While in the volume closing pages Robert Guillot's distinguished account of the bombing of Tokyo reminds us of the immense domestic costs of Japan's military adventures.

This anthology may fail to provide a full and coherent narrative of one and a half centuries of social development, but this largely reflects the present imbalance of western scholarship. Foreign policy, economic development and domestic politics have all drawn increasing attention but social history remains a largely neglected field of research.

In Postwar Japan: 1945 to the Present much emphasis moves from social and economic themes to international relations and the 'business community'. The Occupation years are largely chronicled by American documents which trace the shift from post-war surrender to the shift from post-war reconstruction, are especially valuable as they have no parallel in the annals of important Japanese history. American sources have provided Japan's constitution and Japanese responses transformed to a living reality. Many of the extracts dealing with contemporary agricultural, education, and politics are drawn from definitive monographs, from radical journals, and are selection of unusual material available and dealt incisively with controversial subjects. These extracts confront relations between American corporations and Japan with a verbatim and collect valuable data in a few brief pages.

In comparison with Imperial Japan this volume suffers from surpluses in its social coverage. Pollution receives little treatment, women are ignored, welfare largely omitted, and there are no extracts from studies such as Dore's City Life in Japan which could add

human dimension to general controversy.

Unfortunately Postwar Japan striven too hard to keep pace with diplomatic developments. Much of its writing on international relations already seems a little dated with the passage of time. The volume's collapse of Tokyo's traditional American policy. There are too many of better relations with the Soviet Union. Yet with the opening of a sensitive dialogue between Washington and Soviet bloc, the main of central importance. The main of central importance. The main of central importance.

The Chinese Communist Party in Power 1949-76. JACQUES GUILLERMAZ. 24cm, 640p, illus., cloth £16 0 7129 0752 1

Cadres, Commanders and Commissars. JANE L. PRICE. 24cm, x, 228p, cloth £12 0 7129 0739 4

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Tenaka Gilch. WILLIAM F. MORTON. 22cm, 256p, cloth £12 0 7129 0767 X 10. CAMDEN HOUSE, PUBLISHERS.

## BOOKS

### Monks in politics

Religion and Politics in Sri Lanka by Urmila Phulais. Harmondsworth, £7.00 ISBN 0 900983 S2 4

First of all, a word to the unwary who may be misled by the title of this book. While ostensibly concerned with religion and politics the actual subject matter is much more limited. Urmila Phulais is concerned almost exclusively with the relationship between the Buddhist monks of Sri Lanka and various governmental processes and policies in so far as they affect their interests. Phulais is not concerned with the majority religious groups of the country, the Hindus, Muslims and Christians, nor even with the Buddhist monks. Rather she concentrates on what she sees as the Buddhist elite, the monks and their relationship with the political elite of Sri Lanka.

The first two chapters of the book are devoted to the historical and sociological background. Then, after a detailed description of the organization of the Sangha, she discusses a number of themes which involve contact between the monks and the political parties of Sri Lanka. The methods used by the parties to gain the Buddhist support are described, followed by a discussion of the electoral behaviour of the Sangha since independence. She moves on to cover various government attempts to reform the Sangha; the attempts of the Sangha to influence political decisions concerning the language

issue, and their involvement in international affairs. Overall, the book is well researched and documented. In the main, it is based on data not easily accessible to most observers, in particular newspaper files and private records. Phulais also introduces a certain amount of data obtained from her own questionnaires administered to monks and in politicians. If the major virtue of this volume is the presentation of this otherwise inaccessible data, then a subsidiary virtue is that in the process of presentation she makes a number of incisive and thought-provoking comments on the political role of the Sangha and the changing attitudes of the political parties in religious issues. Thus she demonstrates the slow erosion of the Sangha's role as a neutral intermediary as the partisan nature of their actions becomes more and more blatant and the growing bipartisan nature of the religious policies of the two major parties.

It is, perhaps, ludicrous to criticize authors for what they have not done, yet one must emphasize the strictly limited nature of the author's analysis. Compared with the relationship between Buddhism and politics in Burma and S. J. Tambiah's World Conqueror and World Renouncer (both reviewed in THE TIMES December 17), Phulais's book is pedestrian in the extreme. Nowhere does she relate her data to the wider issues of Buddhism and political action; nowhere does she discuss how the political actions of

successive rulers have been determined and by the Sangha but by the less authoritative yet more the less real authority of what Buddhist politicians, statesmen and the polity should be. It is only within this much wider framework that the actions of the Sangha and the politicians can begin to make sense. Second, what this book lacks is any well developed set of analytical concepts. References to various 'authorities' in the opening section of each chapter are simply not adequate substitutes for a formal theoretical framework, and one wonders whether it is really necessary to read such hypotheses as 'the greater the importance of a particular issue as perceived by the leaders of a pressure group, the more intensive are the efforts to influence the decision making process'.

Furthermore, there are certain curious gaps in her data. This volume was published in 1976; it refers to events which took place in 1974. Yet in the text she mentions only one mention of perhaps the most important political event of the last twenty years, the 1971 insurrection in which up to 50,000 people are said to have been killed. It is, perhaps, a pity that the book, if there was any, is execrable. I lost count of the misprints which must average more than one per page. I can only recommend this book to the specialist who has to know his way around the intricacies of Sri Lanka politics since independence.

R. L. Stirrat

### Structure of a society

That Possant Social Structure by Jack M. Potter. University of Chicago Press, £13.15 ISBN 0 226 6735 8

In 1947 the American anthropologist John Embree visited Thailand and was greatly impressed with the contrast between what he observed and his experiences in post-war Japan. The article, 'Thailand, a loosely structured social system', published posthumously in 1950, was a preliminary attempt to specify the main characteristic of Thai culture and social organization. It subsequently achieved an important place in the anthropology of Thailand because it both supported and 'explained' later descriptive reports of individualism, impermanence of relations and obligations, and the absence of a strong sense of duty. It features which cumulatively convey the image of amorphousness. Despite the considerable scepticism of some about both its theoretical value and its appropriateness for the overall description of rural Thai society the idea of loose structure has survived as an important influence on most anthropologists working there.

Potter's goal, the final repudiation of this perspective, is expressed

at both descriptive and theoretical levels. In the manner of 'spiteful ethnography' he documents those features of a northern Thai village which embody all that the loose structure theorists find lacking. Although his unit of study, Chiangmai village, is divided into two administrative units it is a physically distinct unit whose members support a single village school and temple. In a country where descent is generally classified as cognatic Potter notes the existence of matrilineal groups and uncestral cults. As is not unusual in the villages of northern Thailand villagers participate in long-established associations for the maintenance and repair of irrigation systems. While acknowledging the divisions caused by variations in wealth, especially in land, Potter emphasizes the image of Chiangmai as a stable and discrete community where the multiple principles of association are expressed in a web of cross-cutting relations which create a high degree of integration and simultaneously incorporate the village into the wider society. With its clear exposition of those features of village life which reflect the author's analytical contributions this book is a valuable contribution to the ethnography of a region whose distinctive forms and

problems have been inadequately appreciated. The final chapter is a comparative essay comprising a third of the book in which the Chiangmai data is integrated with a careful interpretation of published village studies. From very varied sources Potter isolates 11 structural elements: 'the extended-stem family cycle (including the compound), the bilateral kinship, neighbourliness and formal neighbour-hood', and 'cooperative labor-exchange groups' among others, which seem common to most Thai villages and may be said to 'generate Thai communities'. Useful as this essay is it is not an account of peasant social structure; neither does it provide a structuralist analysis, what Geertz in his study of Balinese villages termed 'levels of organization'. It is curious that Potter does not support his thesis, which he sees as a perspective, as a theory responsible for the illusion of loose structure, by referring to another study of the same village under a different name first published in 1960.

Jeremy Kemp

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# BOOKS

## New proletarians

**The Development of an African Working Class: Studies in Class Formation and Action**  
edited by Richard Sandbrook and Robin Cohen  
Lanham, £8.00 and £3.50  
ISBN 0 582 64779 9 and 64180 2  
Nigeria: Economy and Society  
edited by Gavin Williams  
Rex Collings, £5.25  
ISBN 0 8036 0156

With the growth of industry in the developing countries there emerges a new working class or proletariat. For radicals the vital question is the role of this group in the transformation of society. Will it blow the revolutionary class (Marx or ally) with the peasantry (Lenin); will it provide leadership for an essentially peasant movement (Mao) or will it contribute nothing (Panou)? Unconsciously perhaps, most of us apply models developed in the study of western industrial society, seeking for a culture-laden stereotype of proletarian consciousness.

The papers in the volume edited by Sandbrook and Cohen derive from a conference which they organized in Toronto in 1973. They are of high quality and the collection has been well edited with introductions both to the whole and to the constituent parts. The editors are one exception, the papers deal with English-speaking Africa, a fair balance is maintained between the eastern, western, central and southern countries of the continent.

In the first part, four contributors describe the initial stirrings of working-class consciousness in Kenya, Tanzania, Rhodesia and Zambia and Francophone West

Africa, pointing rightly to a long history of protest movements. But why, one asks, is the labour movement not stronger or more influential at the present time? Why is consciousness today? The second and third parts, dealing with organization and action through most papers overlap these two themes and provide answers. Here are some most valuable contributions in which the trades unions are viewed not from the top but from the bottom; the authors have viewed the strikes which they describe from the shop floor and they reinforce vividly the oft-remarked distance separating union leadership from the rank and file. Both Peace and Jeffries writing on Nigeria and Ghana respectively, describe the political demands and generally anti-government feelings inspired by the strikers and challenge the thesis of a labour misadventure—the rather long inference of which by Saul provides a weak conclusion to the volume.

In its focus upon trade union activity and formal protests, the book perhaps allows the reader to forget that the African working class differs from western counterparts in two important respects—first, its members are not fully committed to wage employment, retaining strong links with their rural homes from whence they have migrated, and second the wage-earning proletariat forms a small minority of the working population even in the urban areas. But it is these factors, recognized by most contributors, which give rise to such apparent paradoxes as the juxtaposition of bourgeois aspirations for success as

## Malaysian historiography

**A History of Malaysia and Singapore**  
by N. J. Ryan  
Oxford University Press, £16.00  
ISBN 0 19 580302 7

First published in 1963, this fifth and enlarged edition incorporates the results of more recent scholarship and brings the history up to the early 1970s. As an introductory work it contains a fund of chronological and geographical data, as well as some evocative photographs and a number of helpful maps.

Teachers who have previously relied on the late Sir Richard Winsted's *A History of Malaya* will find Ryan's work, in comparison, less ornate but more lucid. And Ryan not only incorporates into the narrative the territories of Sarawak and Sabah, which entered the Malaysian Federation in 1963, but gives greater attention than does Sir Richard to the period of colonial rule and the development of a plural society. In particular, Ryan provides lengthy accounts of the establishment of both the Chinese and Indian communities, which together were to make up half the population of Peninsular Malaya, and he also examines in some detail the British deconcentration policy of the later-war years which aimed to protect Malay interests.

As a "definitive student's text", but definitive histories, even if desirable, are difficult to write, and *A History of Malaysia and Singapore* has some serious deficiencies. It is not true, for instance, that the "consist states" played little part in the eighteenth century history of the Peninsula. Trengganu was a major commercial, political and cultural centre, and a Chinese account of the early 18th century Kelantan had long been the destination of a large number of Chinese miners and merchants. A work written in 1973 might be expected to take into account recent research on the relationship between China and the Malay peninsula, and the possible connections between the fifteenth-century Sultanate of Malacca and the earlier Srivijayan empire.

But in attempting a synthesis of the present state of historical knowledge of Malaysia, in the author's own words, the book has a more serious fault. It fails to convey the problematic nature of many of the issues examined. The scholars who whose monographs form the basis of Ryan's history, nor is he concerned to discuss the primary sources, travellers' accounts, government archives, and newspaper reports, which constitute the source material for Southeast

Asian history are liable to a variety of interpretations, a tendency towards revisionism further encouraged by the political attitudes and by the influence of the social sciences. "Historical knowledge" of Malaysia is more confused than perhaps at present, particularly in being reexamined, and late prehistory are emerging. The history, regarding both the effects of British colonial policy, its effects on the Malay and Chinese communities, Dutch, British, Eastern and Malaya, have been discredited regarding the process and character of the specific Malay literature as an historical source have been discussed by historians and philologists, and a little help from anthropologists. Several scholars have been credited during the organization and editing of traditional Malay political texts.

In playing down such disputes these Ryan maintains the history narrative but disguises the weaknesses which makes Malaysian history attractive.

A. C. M.

## Job seekers

**Sluggish Labour and the City: A Study of Bombay**  
by Heather and Vijay Joshi  
Oxford University Press, £5.25  
ISBN 0 19 566531 8

In the 1970s the development debate has become much entangled with "urban bias". The United Nations has forecast that urban population in non-communist developing countries will grow annually at 4.1 per cent to the year 2000, a rate substantially in excess of population growth and high even in relation to historical experience in the West. Capital-intensive industrial production concentrated in cities has raised wages far above the level of incomes in rural areas. This, it is often argued, has induced a larger migration of job seekers than can find regular employment, many of whom will

over into work in an "informal sector" of small traders, workshops, and services, or into unemployment. The Joshi's study looks at the development of employment in India's second largest city mainly over the period between the Indian censuses of 1961 and 1971. Census data are supplemented by an impressive wide variety of other statistical and fieldwork sources, though the authors apparently did not conduct fieldwork of their own. Defining the "formal" or "organized" sector as firms (or government agencies) employing more than 25 workers, the "informal" sector is found to have accounted for half of the 1961 workforce, and subsequent "organized" sector growth has provided only about 40 per cent of new jobs. Wage differentials between the two sectors are substantial, at least 100 per cent for "organized" unskilled workers, reflecting a combination of trade union power, higher wages paid by western firms, and a screening off of educated workers from among those seeking employment.

metals and engineering the most important single category—supporting the authors' contention that the sector is a significant repository of industrial skills.

Most of the findings of this competent and careful study primarily provide supporting evidence to those of other research, including the International Labour Office studies to Kenya, Columbia and Sri Lanka. Yet one particularly interesting and unexpected result emerges: that the growth of the "organized" sector employment in Bombay does not seem to have attracted more migrants than there were jobs. Repeating by "organized" sector firms is done by large sectors through personal contacts of existing employees, this concentrating migration on a small number of points of origin and raising hopes that those who arrive without contacts would secure such employment.

In general, the evidence of "graduation" in Bombay from "informal" to "organized" sector is slight, partly also because the latter tends to require (often unnecessary) educational qualifications. Real incomes in the "informal" sector, however, are found to be slightly in excess of those in surrounding rural areas, providing in themselves incentives to migration. Limited upward movement does occur within the "informal" sector, with some evidence of new migrants first entering construction or services before perhaps securing better-paid work in small-scale manufacturing. Open unemployment is slight, and more common among educated workers.

The book's policy recommendations differ little, for example, from those of the World Bank's *Influential Redistribution with Growth* study, which would shift resources towards the "informal" sector, though recognizing that without simultaneous rural improvements successful urban development could induce increased and self-defeating labour inflows. Important too, is need to free the "informal" sector from bureaucratic restrictions; and for the authorities in India, and elsewhere, to regard it as a significant source of future growth rather than, in the Joshi's pungent phrase, "a menial collection of riff-raff with little productive potential".

John Thornburn

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# BOOKS

## Hunters

**Kalahari Hunter-Gatherers: Studies of the !Kung San and Their Neighbours**  
edited by Richard B. Lee and Ireen de Vore  
Harvard University Press, £13.90  
ISBN 0 674 39980 8

Until the development of agriculture, only about 12,000 years ago, all mankind lived entirely by hunting and gathering. The Bushmen of the Kalahari are one of the few remaining groups of people who hunt and gather for nearly all their subsistence; and according to Lee it is this which makes the study of the !Kung so especially important for anthropology.

The !Kung, one of several Kalahari Bushman peoples, inhabit the tree savannah region of north-western Botswana. Thanks to an abundance of nutritious vegetable foods in the region, !Kung women need spend only a few hours a day in pursuit of food. Men spend much of their time hunting and talking about hunting, and they show great interest in and knowledge about animal behaviour. They give meat, but also non-consumable possessions, through wide-ranging exchange networks. Hunting is considered anti-social, and no one openly strives to gain either material wealth or prestige.

Four general topics are treated in the book: ecology and social change, population and health, childhood, and behaviour and belief. The major emphasis is on the !Kung, but two chapters deal with other Bushman peoples.

As Gunther's paper on the "squatter" population of the Ghaury cattle ranches shows, external pressures are causing rapid changes in traditional Bushman economic life and territorial organization, and to a lesser degree, in other aspects of culture. But it is interesting that their religious beliefs and their ritual curing dances have not been much affected; if anything, social change in other spheres has led to an increase in ritual activity (even at the mission station where Gunther lived during his fieldwork). Bushmen today want to own their own cattle and goats, but all too often they end up as mere herdboys for wealthier white and black stockowners. Appropriately, the book is dedicated to future generations of Bushmen.

Kalahari Hunter-Gatherers is the result of more than a decade of superb fieldwork on !Kung demography, subsistence ecology, nutrition, cosmology, folklore and social change, by the Harvard Kalahari Research Group members. Unlike traditional social anthropological monographs, this collection is bound to be of interest (and of use) to prehistoric archaeologists, psychologists, human biologists and, no doubt, general readers as well. Although it could be argued that all this intensive data-collecting on one people has been done at the expense of basic research on other African hunter-gatherers, the unique detail and generosity of material on the !Kung is (as Sherwood Washburn says in his foreword) "an ideal demonstration of what the science of anthropology can do".

Unfortunately, however, there are a number of factual errors. In particular several of the contributions seem to be somewhat muddled about linguistic classification. Henry Harpending asserts incorrectly that !Kung and !Ning are mutually intelligible. Lee calls E. O. J. Westphal's language families "groups", and Gunther calls D. F. Bleek's language groups "families" and feebly quotes Bleek as having written that "the link in the chain goes from K'angabara (Mouth People, or Mouthless People) means 'weak' (hence Weak People). Others display remarkable ignorance of early and even recent literature on the !Kung peoples.

Finally, how can the editors insist on the supposedly complicated term San (actually, a derogatory name word for Bushmen) and at the same time use the derivative term "Hottentots" (for Khoikhoi) throughout the book? It is a pity that such a significant and otherwise illuminating book is marred by parochialist and careless scholarship.

Alan Barnard

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CONSULTANT IN ELT MATERIALS PRODUCTION (India) Central Institute of English and Foreign Languages, Hyderabad. To assist in the production of English Language Teaching (ELT) materials in the Radio/TV/Cinematography unit.

THE BRITISH COUNCIL LONDON W.C.1 THE BRITISH COUNCIL, 11, BEDFORD SQUARE, LONDON, W.C.1, A.A.

ITALY THE UNIVERSITY OF LEGNANO LECTURER IN ENGLISH TO TEACH IN THE DEPARTMENT OF ENGLISH AND AMERICAN STUDIES.

UNIVERSITY OF GUYANA Vacancy Department of Economics Applications are invited for positions of LECTURERS in the Department of Economics which is offering both an undergraduate and postgraduate degree.

UNIVERSITY OF DUBLIN Trinity College PROFESSORSHIP OF LAWS Applications are invited for appointment to this new Chair, there is no restriction as to subject, but it is expected that the successful candidate will have interests in Land Law or European Community Law.

UNIVERSITY OF LONDON THE NEW UNIVERSITY MADRID RESEARCH FELLOWSHIP Applications are invited for the post of Research Fellow at the New University of Madrid.

BIRMINGHAM THE UNIVERSITY FACULTY OF EDUCATION DEPARTMENT OF SPECIAL EDUCATION Applications are invited for the post of Lecturer in Special Education.

VICTORIA UNIVERSITY OF WELLINGTON New Zealand Applications are invited for the following posts: SENIOR LECTURERSHIP OR LECTURERSHIP IN ACCOUNTANCY.

UNIVERSITY OF THE WEST INDIES - JAMAICA Applications are invited for the following posts: Senior Lecturer/Lecturer in Accounting.

DUBLIN UNIVERSITY COLLEGE Applications are invited for the following posts: SENIOR LECTURER IN POLITICAL SCIENCE.

EXETER THE UNIVERSITY Applications are invited for the following posts: SENIOR LECTURER IN LAW.

Polytechnics MANCHESTER THE POLYTECHNIC Applications are invited for the post of PRINCIPAL LECTURER IN MANAGEMENT ACCOUNTING.

MANCHESTER THE POLYTECHNIC Applications are invited for the following posts: SENIOR LECTURER/LECTURER IN PHYSICS.

UNIVERSITIES CONTINUED BAYERO UNIVERSITY COLLEGE NIGERIA Applications are invited for the following posts: PROFESSOR.

UNIVERSITY OF MALAWI (BUNDA COLLEGE OF AGRICULTURE) Applications are invited for the post of PRINCIPAL OF BUNDA COLLEGE OF AGRICULTURE.

UNIVERSITY OF BOTSWANA AND SWAZILAND Applications are invited for the following posts: LECTURESHIP IN ECONOMICS.

UNIVERSITY OF BOTSWANA AND SWAZILAND Applications are invited for the following posts: LECTURESHIP IN PHYSICS.

UNIVERSITY OF BOTSWANA AND SWAZILAND Applications are invited for the following posts: LECTURESHIP IN CHEMISTRY.

UNIVERSITY OF BOTSWANA AND SWAZILAND Applications are invited for the following posts: LECTURESHIP IN CHEMISTRY.

UNIVERSITY OF BOTSWANA AND SWAZILAND Applications are invited for the following posts: LECTURESHIP IN CHEMISTRY.

UNIVERSITY OF BOTSWANA AND SWAZILAND Applications are invited for the following posts: LECTURESHIP IN CHEMISTRY.

UNIVERSITY OF BOTSWANA AND SWAZILAND Applications are invited for the following posts: LECTURESHIP IN PHYSICS.

UNIVERSITY OF BOTSWANA AND SWAZILAND Applications are invited for the following posts: LECTURESHIP IN PHYSICS.

UNIVERSITY OF BOTSWANA AND SWAZILAND Applications are invited for the following posts: LECTURESHIP IN PHYSICS.

UNIVERSITY OF BOTSWANA AND SWAZILAND Applications are invited for the following posts: LECTURESHIP IN PHYSICS.

UNIVERSITY OF BOTSWANA AND SWAZILAND Applications are invited for the following posts: LECTURESHIP IN PHYSICS.

CAMBRIDGE CAMBRIDGE INSTITUTE OF EDUCATION Applications are invited for the post of TUTOR IN THE EDUCATION OF CHILDREN WITH LEARNING DIFFICULTIES.

VICTORIA UNIVERSITY OF WELLINGTON Chair of Accountancy or Finance Applications are invited for the above-mentioned newly created Chair.

MASSEY UNIVERSITY Palmerston North, New Zealand Chair of Economics Applications are invited for the Chair of Economics.

LONDON THE UNIVERSITY CAREERS ADVISORY SERVICE Applications are invited for the post of CAREERS ADVISER.

LONDON THE UNIVERSITY CAREERS ADVISORY SERVICE Applications are invited for the post of CAREERS ADVISER.

UNIVERSITY OF WESTERN AUSTRALIA Perth LAW Applications are invited for appointment as ASSOCIATE PROFESSOR in the Law School.

EDINBURGH HERIOT-WATT UNIVERSITY Applications are invited for the following posts: SENIOR LECTURER IN CHEMISTRY.

LEEDS THE UNIVERSITY SCHOOL OF EDUCATION Applications are invited for the post of SENIOR LECTURER IN EDUCATION.

LEEDS THE UNIVERSITY SCHOOL OF EDUCATION Applications are invited for the post of SENIOR LECTURER IN EDUCATION.

LEEDS THE UNIVERSITY SCHOOL OF EDUCATION Applications are invited for the post of SENIOR LECTURER IN EDUCATION.

LECTURER IN APPLIED MATHEMATICS Applications are invited for the above post. Preference may be given to candidates with research interests in Non-Linear Phenomena or in Theoretical Biology.

LONDON THE UNIVERSITY LECTURESHIP IN MEDICAL PHYSICS Applications are invited for the post of LECTURER IN MEDICAL PHYSICS.

LONDON UNIVERSITY COLLEGE LECTURESHIP IN MEDICAL PHYSICS Applications are invited for the post of LECTURER IN MEDICAL PHYSICS.

LONDON THE UNIVERSITY GOLDSTEIN COLLEGE Applications are invited for the post of SENIOR LECTURER IN CHEMISTRY.

LONDON THE UNIVERSITY GOLDSTEIN COLLEGE Applications are invited for the post of SENIOR LECTURER IN CHEMISTRY.



Universities continued

MANCHESTER

THE UNIVERSITY OF MANCHESTER... Applications are invited for the post of Lecturer in Social Anthropology...

MANCHESTER

THE UNIVERSITY OF MANCHESTER... Applications are invited for the post of Lecturer in Arabic Literature...

NEWCASTLE UPON TYNE

THE UNIVERSITY OF NEWCASTLE UPON TYNE... Applications are invited for the post of Lecturer in Education...

OXFORD

THE UNIVERSITY OF OXFORD... Applications are invited for the post of Lecturer in Physical Chemistry...

OXFORD

THE UNIVERSITY OF OXFORD... Applications are invited for the post of Lecturer in Law...

READING

THE UNIVERSITY OF READING... Applications are invited for the post of Lecturer in Economics...

SALFORD

THE UNIVERSITY OF SALFORD... Applications are invited for the post of Lecturer in Business Administration...

OXFORD

THE UNIVERSITY OF OXFORD... Applications are invited for the post of Lecturer in Mathematics...

OXFORD

THE UNIVERSITY OF OXFORD... Applications are invited for the post of Lecturer in History...

OXFORD

THE UNIVERSITY OF OXFORD... Applications are invited for the post of Lecturer in English Literature...

OXFORD

THE UNIVERSITY OF OXFORD... Applications are invited for the post of Lecturer in Geography...

OXFORD

THE UNIVERSITY OF OXFORD... Applications are invited for the post of Lecturer in Physics...

OXFORD

THE UNIVERSITY OF OXFORD... Applications are invited for the post of Lecturer in Chemistry...

OXFORD

THE UNIVERSITY OF OXFORD... Applications are invited for the post of Lecturer in Biology...

OXFORD

THE UNIVERSITY OF OXFORD... Applications are invited for the post of Lecturer in Medicine...

Fellowships and Studentships

University of Cambridge

Hunting Group Scholarship

The Scholarship is intended to provide opportunity for research in contemporary problems of regional development...

Further details may be obtained from the Head of the Department of Geography, Downing Place, Cambridge CB2 3EN...

LONDON

THE UNIVERSITY OF LONDON... Applications are invited for the post of Lecturer in Mathematics...

LONDON

THE UNIVERSITY OF LONDON... Applications are invited for the post of Lecturer in History...

LONDON

THE UNIVERSITY OF LONDON... Applications are invited for the post of Lecturer in Physics...

LONDON

THE UNIVERSITY OF LONDON... Applications are invited for the post of Lecturer in Chemistry...

LONDON

THE UNIVERSITY OF LONDON... Applications are invited for the post of Lecturer in Biology...

LONDON

THE UNIVERSITY OF LONDON... Applications are invited for the post of Lecturer in Medicine...

Polytechnics

Faculty Administrative Officer

required in the Engineering Faculty, Getting Precinct, Dagenham, Essex. He/she will primarily head up the professional administrative support group...

HELP North East London Polytechnic

Applications are invited for the post of Lecturer II Senior Lecturer in Manpower Management, Department of Management Studies...

THE POLYTECHNIC OF WALES

Applications are invited for the post of Lecturer II Senior Lecturer in Manpower Management, Department of Management Studies...

CITY OF BIRMINGHAM

THE POLYTECHNIC DEPARTMENT OF LAW... Applications are invited from persons who have completed their law studies...

LEICESTER

THE POLYTECHNIC SCHOOL OF BUILDING... Applications are invited from persons who have completed their building studies...

LONDON

THE UNIVERSITY OF LONDON... Applications are invited for the post of Lecturer in Mathematics...

LONDON

THE UNIVERSITY OF LONDON... Applications are invited for the post of Lecturer in History...

LONDON

THE UNIVERSITY OF LONDON... Applications are invited for the post of Lecturer in Physics...

LONDON

THE UNIVERSITY OF LONDON... Applications are invited for the post of Lecturer in Chemistry...

LONDON

THE UNIVERSITY OF LONDON... Applications are invited for the post of Lecturer in Biology...

LONDON

THE UNIVERSITY OF LONDON... Applications are invited for the post of Lecturer in Medicine...

SHEFFIELD

CITY POLYTECHNIC... Applications are invited from persons who have completed their law studies...

LEICESTER

THE POLYTECHNIC SCHOOL OF BUILDING... Applications are invited from persons who have completed their building studies...

LONDON

THE UNIVERSITY OF LONDON... Applications are invited for the post of Lecturer in Mathematics...

LONDON

THE UNIVERSITY OF LONDON... Applications are invited for the post of Lecturer in History...

LONDON

THE UNIVERSITY OF LONDON... Applications are invited for the post of Lecturer in Physics...

LONDON

THE UNIVERSITY OF LONDON... Applications are invited for the post of Lecturer in Chemistry...

LONDON

THE UNIVERSITY OF LONDON... Applications are invited for the post of Lecturer in Biology...

LONDON

THE UNIVERSITY OF LONDON... Applications are invited for the post of Lecturer in Medicine...

Colleges of Higher Education continued

DEPUTY DIRECTOR

Chelmer Institute of Higher Education. The vacancy arises from the appointment of Dr. Jonathan May to the Principalship of Darby Lonsdale College of Higher Education...

Colleges of Education

LINCOLN... Applications are invited for the post of Lecturer in Mathematics...

LONDON

INNER LONDON EDUCATION AUTHORITY... Applications are invited for the post of Lecturer in Mathematics...

LONDON

INNER LONDON EDUCATION AUTHORITY... Applications are invited for the post of Lecturer in History...

LONDON

INNER LONDON EDUCATION AUTHORITY... Applications are invited for the post of Lecturer in Physics...

LONDON

INNER LONDON EDUCATION AUTHORITY... Applications are invited for the post of Lecturer in Chemistry...

LONDON

INNER LONDON EDUCATION AUTHORITY... Applications are invited for the post of Lecturer in Biology...

LONDON

INNER LONDON EDUCATION AUTHORITY... Applications are invited for the post of Lecturer in Medicine...

DORSET INSTITUTE OF HIGHER EDUCATION

L II/SENIOR LECTURER IN FINANCIAL MANAGEMENT. To lecture in Diploma in Management Studies and Professional Course students. Salary scale 1, 11, 11.279-15,293 + E132 supplement...

Administration

THE ASSOCIATED EXAMINING BOARD STATISTICS OFFICER. Previous applicants need not re-apply as they will automatically be re-considered.

OXFORD LOCAL EXAMINATIONS

Appointment of Assistant to the Secretaries/Assistant Secretary. The Colleges intend to make an appointment, as an addition to the present staff...

CREWE AND ALSAGER

COLLEGE OF HIGHER EDUCATION. SENIOR LECTURER IN PAWNS. Salary in accordance with the scale for Senior Lecturers in Higher Education...

LANCASHIRE

AREA OF GEOGRAPHY. SENIOR LECTURER IN HUMAN GEOGRAPHY. Salary in accordance with the scale for Senior Lecturers in Higher Education...

THE ROYAL IRISH ACADEMY

EXECUTIVE SECRETARY. The salary will be approximately to that of a University Professor. Particulars may be obtained from: The Secretary, Royal Irish Academy, 19 Dawson Street, Dublin 2.

LANCASTER

SOCIAL ADMINISTRATION. Applications are invited for the post of Lecturer in Social Administration. Salary in accordance with the scale for Lecturers in Higher Education...

LANCASTER

SOCIAL ADMINISTRATION. Applications are invited for the post of Lecturer in Social Administration. Salary in accordance with the scale for Lecturers in Higher Education...

Colleges and Institutes of Technology

ABERDEEN

ROBERT GORDON'S INSTITUTE OF TECHNOLOGY. SCOTT SUTHERLAND SCHOOL OF ARCHITECTURE. LECTURER IN ARCHITECTURE AND PLANNING.

BRADFORD

THE UNIVERSITY OF BRADFORD... Applications are invited for the post of Lecturer in Mathematics...

BRADFORD

THE UNIVERSITY OF BRADFORD... Applications are invited for the post of Lecturer in History...

BRADFORD

THE UNIVERSITY OF BRADFORD... Applications are invited for the post of Lecturer in Physics...

BRADFORD

THE UNIVERSITY OF BRADFORD... Applications are invited for the post of Lecturer in Chemistry...

BRADFORD

THE UNIVERSITY OF BRADFORD... Applications are invited for the post of Lecturer in Biology...

BRADFORD

THE UNIVERSITY OF BRADFORD... Applications are invited for the post of Lecturer in Medicine...

BRADFORD

THE UNIVERSITY OF BRADFORD... Applications are invited for the post of Lecturer in Medicine...

HATFIELD

COMPUTER, EDUCATION. Applications are invited for the post of Lecturer in Computer Science...

Handwritten note: 121A



